

THE AMERICAN ARCHITECT AND BUILDING NEWS

VOL. LXXIII

SATURDAY, AUGUST 10, 1901

No. 1337



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THE struggle between the United States Steel Corporation and the labor leaders looks less formidable the longer it continues. It is not many years since such a contest would have been made to involve many thousands of men, having no interest in steel manufacture, but coerced into supporting a cause entirely indifferent to them by union terrorism. Now, things are changed. The "sympathetic strike" is not only unpopular among workingmen, but is absolutely forbidden by the rules of many of the most powerful unions; and the man who could threaten effectively to "stop every wheel" on a great railroad unless a certain number of shares of stock were immediately made over to him has been succeeded by one who has to disguise himself with false whiskers and labor individually with the "toilers" to induce them to listen to his commands. So far as present prospects are concerned, the end of the "struggle" seems likely to be that, instead of forcing the "unionizing" of the sheet-steel mills which are now free, some, if not all, of the present union mills will be declared open. It is interesting to observe that the attempt, made in true union style, to throw thirty thousand coal-miners out of work by ordering a strike of the nine hundred firemen who feed the boilers of the pumping and hoisting engines, was promptly suppressed by the miners themselves, who notified the firemen that the boilers would be fed, whether the firemen struck or not. As the only object in striking was to distress the miners, and add confusion in the coal region to that in the iron district, the firemen concluded that, under the circumstances, they might as well stay in their places.

IT seems tolerably certain that prices of structural iron, as well as of glass, paints and many other materials used in building, will be lower before many months, either through the reduction of duties on them, and the consequent admission of competing foreign goods to our markets, or by the imposition of prohibitory duties in foreign countries upon goods imported from the United States, with the result of throwing a large surplus of goods back on the home market. Independent of any theories as to whether it is desirable to continue longer the use of the public force to enable the manufacturers of protected materials to extort enormous profits from their helpless American customers, the simple fact that the exports of the United States are now about five hundred million dollars a year greater than the imports, or, in other words, that the English, French, Germans and Italians, instead of exchanging on even terms their labor for ours, are obliged to raise, on an average, from twenty to thirty dollars a year per family, in cash, in addition to their labor, to buy from the Americans the flour and pork and cotton that they need for food and clothing, at the very time that American competition in manufactured goods is robbing them of the means of earning a living, is sufficient to make it tolerably certain that attempts at defensive retaliation will not be long delayed, unless they are forestalled by wisdom

and moderation on the part of the Administration and of Congress. Fortunately, there are evidences that the country will not look in vain for this wisdom and moderation. The President, who possesses that rarest and greatest of all virtues in a person in high office, a willingness to appear inconsistent if he is satisfied that the public good will be promoted by a change in policy, is said to think that high protection has done its work, and that other considerations are now entitled to a hearing; while some of the best and ablest leaders of the Republican party in Congress not only hold similar views, but are engaged in studying definite plans for the relief of American consumers, as well as for averting the violent measures of self-defence which present conditions seem likely to force upon Europe. It seems to be agreed that, in any case, the first object of tariff modifications, either here or abroad, will be manufactured iron. Whether the next will be coal, glass, woollen manufactures, silks or other goods it is impossible to guess; but if the process of tariff revision is once begun, it is not likely to be soon terminated.

A CONTROVERSY, of a kind which is becoming more common every day, is before the Wisconsin courts. A large building, occupied in part by a department-store, with a large stock of goods, was so weakened, as is supposed, by the removal of partitions, that it fell; and, in consequence of its fall, the ruins took fire, the fire and the collapse together causing a loss of one hundred and fifty thousand dollars. The policies of insurance on the building provided, as do most policies, that indemnity should be paid only for losses caused by fire; and, as, if there had been no collapse, there would have been no fire, the insurers claim that the loss was entirely due to causes not covered by the policies. The owners take a different view of the matter, and have sued the insurers for indemnity. It is not often that the question of indemnity for loss caused by the fall of a building, and consequent fire, comes so clearly before a court, without complications in the nature of uncertainty whether the fire or the collapse came first, and the decision will be awaited with great interest. In the meantime, a suit, under circumstances almost precisely similar, has been entered in the Pennsylvania courts, the subject of the dispute being the insurance on a building in Pittsburgh, which fell, and afterwards took fire, the contention of the underwriters being that the collapse began ten hours before fire was discovered in the building.

THE agitation for free public baths and laundries has been revived in New York, with the support of some prominent members of the city government, and of many newspapers. Several public bathing establishments already exist in the city, but others are wanted, and apparently, badly wanted, the Commissioner of Public Buildings being reported to have said that, in his opinion, public baths were as necessary as schools, and more so than libraries. Whether he considers free laundries of equal importance is not mentioned. If the people of New York were obliged to choose between education and going unwashed, we should be inclined to agree with Commissioner Kearny; but, even under present conditions, it is quite possible in New York for cleanliness to be combined with going to school, even in the case of very poor people; and it is by no means certain that either public baths or public laundries are an unmixed blessing to the people who use them. On the contrary, public laundries in Europe have been strongly condemned by the best friends of the poor, as affording an almost irresistible temptation to women to collect in them and gossip, under pretence of using them, leaving their little children neglected at home; and public baths, while less open to objection, are certainly inferior in moral and physical value to private baths at home. So far as children are concerned, it is always possible to provide baths in the public schools, and, what is of still more importance, to see that they are used; and, under the protection of their teachers, the children can be regularly purified, externally and internally, and trained to habits of cleanliness, without any of the dangers incident to the use of public baths by the young. After a family has thus been taught the benefit and pleasure of washing, a pail of water heated on the stove, with a piece of soap and an old rag, are all that is required to continue the habit, and there are, or should be, few tenements where these cannot be found.

NOT long ago, passing through a very poor and crowded district of Boston, inhabited almost exclusively by Italians and Russian Jews, we saw what seemed to us an interesting illustration of the influence of the establishment of school-baths, which were fitted up in the school-house of the district some three years ago. As it was vacation-time, the school-baths were not available, but some dozen children, who found their bare feet and legs in a condition which did not seem to them presentable, were standing on the sidewalk while a little Italian girl, with the sweetness and patience characteristic of the race, tugged pail after pail of water from a neighboring tenement-house, and poured it over the offending members, until they were satisfactorily washed. None of the children were old enough to be sent alone to a public bath, but they had already learned the use of water, and can be trusted, when they grow older, to keep themselves reasonably clean in their own homes, without being exposed to the dangers and temptations of public bath-houses.

THE Boston *Transcript* objects to our suggestion of a week or two ago, that any rich man, with two million dollars to give away, could confer a greater benefit with it, or the income of it, by buying American pictures than by presenting it to the American Fine-Art Federation, for the purpose of erecting a building for its "administrative offices," on the ground that the course which we propose would be equivalent to "subsidizing" art, and that the effect of this artificial stimulation would be to increase the supply beyond the demands of the market, as in the case of "other lines of business artificially stimulated." In place of this, the *Transcript* thinks that art and artists should be left to await "the normal growth of taste," and says that "The more completely art rests upon a purely commercial basis, as in Paris, the better for art and artists."

WE must confess that we do not see why the purchase of good pictures, by people able to pay for them, should be regarded as an unhealthy stimulus to art, and we so fully agree with the *Transcript* that the conditions existing in Paris are better adapted, on the whole, than those existing anywhere else for the encouragement and development of art and artists that the intention of our article was to propose a course which might lead to the formation of such conditions. Although it is true that art, in Paris, rests upon a purely commercial basis, artists being obliged to take for their works what they are worth in open market, instead of receiving more than they are worth under pretext of subsidy or bounty, this does not alter the fact that the painter who produces a good picture in Paris is much surer of a customer for it than he is here; while the Government is always ready to purchase any work of surpassing merit, and, by such purchase, to establish the reputation and fortune of the artist. Although the Government usually pays less for a picture than it could be sold for to private parties, so that its transactions have nothing of subsidy or "artificial stimulus" about them, the artists are very ready to accept the terms offered, on account of the distinction which the purchase gives them.

EVERY student of the history of art knows that a wealthy and discerning patron has always been an essential element in the development of every great school of painting or sculpture. If it had not been for the popes, Raphael would probably never have been more than a respectable portrait-painter, and some king, or municipality, or ecclesiastical or temporal magnate has always had to lead the way in confirming the reputation, and encouraging the ambition, of artists who have shown evidences of talent. In Paris, this part of enlightened and conspicuous patron of the arts is taken by the Government, and, as it is, for the present, useless to expect any of our Federal, State or municipal authorities to assume similar functions with the discernment which is essential to their successful exercise, it seems to us that some very rich man, one, for instance, of the sort that is likely to be able and willing to give two million dollars toward a building for the administrative offices of a small clique of artists, would, in this country, be a good substitute for them. Of course, we should not wish to see such a man "subsidizing" art by buying pictures and statues indiscriminately. Congress has already made itself and the country sufficiently ridiculous in that way, and it is for the very reason that States and municipalities could not now be trusted to choose judiciously that it seems to us that the most effective and influential patronage of the arts in this

country can, for the present, be exercised by private persons. Undoubtedly, they would desire to be guided in their choice, just as the French Government avoids purchasing for the Luxembourg or the Louvre anything which has not been, for several months, at least, subjected to public criticism; but, in the absence of any general exhibition of American pictures, the best of the dealers might well be employed to bring to the attention of their principals the most deserving works, as they appeared, and Mr. Marquand, or Mr. Morgan, or Mr. Clark, or any one of several others that might be named, could safely be trusted to make the final selection. It is true, as the *Transcript* says, that artists of talent already earn a living in this country, but it is, in most cases, by doing work in black-and-white, or by turning out pictures in a vein which they have found to be successful, at a sacrifice, perhaps, of what they feel to be their highest possibilities. Even so clever and conscientious a man as the late William M. Hunt is reported to have told a pupil that it was a waste of time to trouble himself with delicacies of form and color which no one else would ever notice; yet in such refinements of form and color lie the real greatness of art. Many artists in this country, more, as we believe, in this country than in any other, possess the mental endowments which, with skill in execution to serve them, are capable of the highest attainment which has ever been reached in painting and sculpture. No one feels more strongly than they that drawing for the magazines and comic journals, or painting eternal forest scenes, or apple-orchards in blossom, while they may secure for them "a good, fair living," is unsatisfactory to their best aspirations; yet they fear to devote the necessary time and effort to work which, as they have good reason to believe, no one in this country will comprehend. Some of them have taken up their residence in Paris, where they find appreciation and reward, but it is time that similar appreciation and reward should be available in this country, and it seems to us that, in some such way as we suggest, not only can the ablest of our artists be encouraged to do the best work that they are capable of, but rich men who like pictures can be saved from the impositions from which the less-instructed ones are apt to suffer, while those of educated taste can form around themselves collections of works which, before many years, should bear comparison with the best of the French pictures which American connoisseurs, with reason, prize so highly.

THE *Engineering News* has sent experts to study into the causes of the settlement of the Brooklyn suspension bridge, and publishes an interesting report of their findings. It is agreed that the trouble was due to the breaking of the suspension-rods, but the cause of the breaking of the rods was not so obvious. It seems, however, that the rods were furnished with hinges, so that they would swing laterally to accommodate themselves to the expansion and contraction of the bridge, and that these hinges, which, apparently, have not been oiled for years, had rusted fast, so that the expansion of the bridge brought a severe bending-strain on the rods. As, in addition to this, the rods themselves were badly rusted, it is not strange that, in the course of time, some of them should have given way. As the experts say, the actual failure was not important, and was readily remedied; but it indicates a state of affairs which may have serious consequences; for, if half a dozen of the suspension-rods have already failed in consequence of conditions which are, presumably, common to all of them, it is fair to infer that the continued influence of the same conditions may, later, produce the rupture of others; and the possible failure of a large number at once, under an unusual strain, might have deplorable consequences.

ALTHOUGH New York is, in many respects, the least American of American cities, it possesses citizens who are disposed, while there is yet time, to preserve the historical sites which still remain. The most interesting among these is, perhaps, the so-called "Grange," the residence of Alexander Hamilton, which, with its beautiful old trees, forms a little park in the upper portion of the city. The Grange has already been repeatedly plotted into city-lots, and a part of it, if we are not mistaken, has been sold and built upon, but what is left is well worth saving. The Jumel Mansion, a conspicuous old house, with a long list of historical associations, has already been purchased by the city, and it may be hoped that others will be acquired in time to preserve for future generations a suggestion of the beauty which once characterized the estates into which the upper part of Manhattan Island was divided.

VENTILATION BY ASPIRATION.¹—II.

THE best part of my life and energy having been expended in attempts to make the fan understood and appreciated, as well as to make it a practical and harmonious element of heating and ventilating apparatus, a favorable opportunity to develop and apply the aspirating-chimney had never offered itself. Yet a superficial consideration is sufficient to enforce conviction that in some cases it is the best power to use.

The four-room school-house in question happened to be about the smallest example that I had been called upon to deal with, and for the first time in my experience since I definitively abandoned the chimney and took up mechanical draught as the best instrument of ventilation, I had a case where the chimney seemed the more proper instrument of the two. In my investigation of this particular example, being without a qualifying practical experience of the method and the details of application, it was natural to turn to the text-books for enlightenment. Given the volume of air to be moved in a unit of time, how could be determined the transverse area of the chimney, its height and the quantity of heat required? Much patient reading and handling of text-books do not lead to a satisfactory answer to this question. The theoretical study of the aspirating-chimney has not brought us to any fixed rule for its proportions in practice; it has merely sought to account, first, for the cause and *rationale* of its action, according to natural laws, and, second, when it was found that the actual result fell far below the indications of theory, to account for the deficiency. This branch of the investigation has proved extremely difficult, and from the nature of the subject can never be reduced to an exact statement or put in the shape of a formula. There are too many elements which enter into the question that are variables rather than constants, and, while they are necessary to a result, are yet beyond the scope of mathematics, and cannot be employed in deducing practical rules from theory. This is a ticklish business, yet Arthur Morin (Gen., Ingén. Civ., Membre de l'Institut, etc.), attempted to solve the problem in this way in two octavo volumes, which taught little that is useful, and led to no practical result except to secure a seat for the author in the academy of immortals. Like many other members of the aristocracy of intellect, he was addicted to the mathematical habit to excess, and, in pursuit of a chimera of the abstract, got too far out of touch with Nature.

Although study of the subject has not achieved such a mastery of it as to have formulated a complete system of definite and universal rules for the guidance of architects and engineers, it has, however, by analysis of the phenomena, been able to account for the forces consumed in overcoming the several kinds of resistances in a concrete case. In the study of an actual chimney at work, it can point out how, instead of the generating force yielding a velocity in the chimney which is expressed by the formula $V = \sqrt{2gh}$, it is only about one-fifth of this amount, the other four-fifths having been consumed in overcoming other resistances besides inertia. In the case of a building to be ventilated, there are at least two sets of resistances to be accounted for as entrance and discharge, also the resistance of passage through two heaters and through register-gratings, etc., of friction of ducts, flues and the chimney itself, besides the resistance of angles, enlargements and contractions and regulating-dampers. To practically ascertain their exact value by measurement of these resistances under test is a proceeding demanding a great deal of time, aided by much special apparatus and the trained skill of the investigator of physical phenomena. Yet, when obtained, the results, while explaining the items of expenditure of power in that particular case, are not so produced and are not so related as to make them available for the basis of an exact general formula, although they may have a high value as examples in lieu of a precise rule.

In addition to this knowledge, limited in scope though it be, we have also the following rules which are always applicable in practice:—

1. The resistance of flow in a tube is proportional to its length.
2. The resistance is in the inverse ratio of the diameter.
3. The resistance increases as the square of the velocity.

With these controlling principles in mind, the practical man with practical work to do can make the best use of existing examples, modifying the results of experience by the probable effect of changed conditions. It is, after all, less a matter of calculation than of judgment based upon experience and checked by reference to theory. It should not be forgotten that theory is not so much a guide to practice as it is the systematic expression of the latter in principles. Theory is, at once, the law and the justification of practice.

Referring to the case in hand, the four-room school-house, I have found nothing better as a guide than the ascertained fact that with a difference between the inside and outside temperature of 70 degrees, the average "naturally" ventilated building, if the outlets are lofty, will show a velocity in rough brick flues not less than 2 feet square of 5.5 feet per second, and in large shafts, 8 to 10 feet per second. The total head to overcome the resistances and generate this velocity is exactly equivalent to that of a water-column $\frac{1}{2}$ of an inch high, which, then, is the measure of the total aspirating-force and of the sum of the resistances to be overcome in such a case. The height of chimney to produce this head at the differences of temperature named is 70 feet.

To effect the ventilation, the whole of this pressure is called for;

there is no surplus for long and badly-arranged flues, and all such flues must lag perpetually behind. It would seem as if a greater pressure, with a free use of throttles or regulating-dampers, to restrict the favored for the benefit of the disadvantaged or overloaded flues, would be more sure to lead to a better general result. To equalize the flow of air in ducts and flues of unequal lengths is one of the most difficult problems in the art of ventilation. In branch-flues alone, it is not uncommon to meet with resistances differing from each other in the proportion of 1 to 6 or more. Then there is to be added the loss of pressure in the main ducts, so that remote and long flues are at the greatest disadvantage. It is clear that any scientific system must aim to assure the action of these weak flues; the whole design must be based upon it. The horse must be strong enough to draw his load up the steepest hills, as well as along the level roads. In the case of a boiler, a half inch of water-column is not in excess as a measure of the chimney-draught. Here the damper is, most of the time, nearly closed and the air-movement nicely regulated, as an effect of excessive power under convenient restraint. Such a draught is satisfactory for one boiler or a battery of boilers, but, if there are scattered furnaces with unequally long underground flues to a central chimney, it is customary to make this very high and to generate a force of an inch or more of water-gauge, with the object of securing such an abundance of power that even the friction of the longest flues will be overcome, with a surplus remaining such as will require the additional resistance of a throttling-damper to hold it in check. This is simply regular every-day practice with chimneys assigned to do the indispensable work of sustaining positive draught in the industrial arts. What is the practice in ventilation? While no very definite instructions are given in the books, it is left to be inferred that sufficient force will be generated by a comparatively insignificant expenditure of heat, and actual examples show only about one-eighth of that customary for chimneys for single boilers, or one-sixteenth of that provided in the case of large centralized stacks. The conditions in these two cases are analogous, respectively, to ventilating a single room and ventilating a many-roomed building. While there should be obviously a greater force in the former kind of work, it ought not to be so very much greater than in ventilation.

It may be objected that the cases are not comparable; that it is obvious the resistances of fuel, boiler-tubes, etc., are so much greater than the resistances to be met with in ventilation that there can be no comparison. But the objection is not reasonable, because the resistances are, in fact, comparable and similar, although different in degree. Moreover, it cannot be controverted that while boiler-chimneys work pretty well, aspirating-chimneys are most uncertain, and, consequently, do not yield positive results in ventilation. I believe their shortcomings have done more to throw discredit upon this art than any other thing, and it would appear that their great defect has been their weakness.

It will be observed that I have taken the "natural" ventilation of lofty buildings as sufficiently good without heat in the aspirating-shaft when the temperature outside is at zero. As I have stated, with a height in the shaft of 70 feet, and an inside temperature of 70 degrees, the force generated by the greater density of the outside over the inside air is measured by the weight of a column of water $\frac{1}{2}$ inch high. This condition is chosen merely because it seems a reasonable basis to start from; that is, not to expend any heat whatever when it is extremely cold, except to produce warmth for comfort, especially since with a chimney of not excessive height there will be force enough to move the air with the requisite velocity. To do this and overcome all resistances, the pressure must not be less than that named, which is produced under the conditions without further expenditure of heat. But, as the temperature rises out of doors, the power of the shaft will become gradually less, because less heat will be added to the air to make it agreeable to the occupants. It follows that the volume of air moved will be less; in other words, the "natural" system gives most air when it takes the most heat to warm it, and takes no advantage of air-warmer to begin with to provide a greater abundance.

As to the height of the chimney, that may be a matter somewhat difficult to arrange. A liberal height is advantageous for two reasons; it assures the necessary force without an excessive expenditure of fuel, and it avoids the effects of contiguous high buildings. If the case happens to be a very simple one, a building of one story with two or three principal rooms, and surroundings not such as would interfere, the height may be reduced one-half, or to about 40 feet. In a project like this, a country school-house, for example, the flues would be short and direct; the resistances on their account would be slight. But for all buildings offering some complexity of plan (and such is the tendency nowadays), or of more than one story, the 70-foot height had better be accepted as the normal. If it were a building for industrial use, to provide such a high chimney would be nothing unusual, and it is reasonable and in accord with common sense and good architecture to accept a necessity like this, and to employ judgment and taste to give it a harmonious place in the design of the structure as an essential part of it.

Now, regarding the generation and maintenance of the ventilating force, and starting from the assumed basis, heat is to be added to the air as it enters the shaft *pari passu* with its rise in temperature out of doors above the assumed basis, that is, zero. There can be no question about this requirement; it is as certain as anything can be. But never yet has any mode been suggested whereby it can be satisfied practically. It will be seen later, however, how beautifully

¹ Continued from No. 1335, page 28.

this theoretical condition can be worked-out in the form of a simple apparatus performing a double function almost automatically. All schemes of aspiration, so far as I know, either provide a fixed heating-power in the shaft, and cause it to operate continuously regardless of the real force required, or, having in mind the costliness of the process, arrange to have heat applied "during the few days when it may be necessary." A rather lame conclusion in view of the array of mathematical formulas employed to reach it. If heat is applied continuously, as in W. P. Trowbridge's scheme, adopted for the former library of Columbia College, there is great waste. Thus, he provides a force of about $\frac{1}{16}$ inch to move the air when it is 60 degrees outside; as the temperature falls the force would necessarily increase. If the velocity were great enough at 60 degrees, which is assumed by him, then it would be in excess at lower temperatures. Hence, as the temperature lowers, the ventilation increases, and with it the cost of heating, which is exactly the opposite of what ought to be, because the volume of air is increased when the expenditure of heat is increased. A truly scientific and rational scheme would give the most air when it cost least to have it. In the example quoted, the aspirating-force at zero would reach the high pressure of $\frac{1}{4}$ inch with a shaft only 50 feet high, and the waste of air and heat would be excessive. There is nothing scientific or systematic about such schemes. What is required is that the force should be uniform regardless of the weather, and that it should be sufficient, but that, for the sake of economy, it should be no more than sufficient; for this reason I limit it to $\frac{1}{8}$ inch of water. To satisfy weather-changes and yet retain a constancy of force, demands corresponding, but inverse, changes in the heat-quantity used in the shaft, the expenditure being least when the weather is coldest, and the reverse.

On the other hand, when the chimney-draught is weak, what is the result? Everything goes wrong. Why, then, should not the same be the case when the aspiration is weak, and it is a case of air moved in the process of ventilation instead of combustion? But in order to strengthen it, if we add to the power of the ventilating-chimney sufficient heat to produce the certainty of effect sought for, the cost of ventilation will then appear almost prohibitive. It would be so expensive that its very cost would become an insuperable obstacle. It is already a question with engineers whether the chimney is not too costly a device for producing draught even for boiler-plants, and whether it is not better economy to extract all the heat of combustion from the gases by heating feed-water rather than to sacrifice it in the production of draught through the aid of a costly chimney. In very large plants both deduction and practice have proved that it is good economy to cool the gases down to a very low degree, in which condition they are worthless to make draught, and to supply their place by engine-driven blowers. For many years large fans have gradually been displacing the heated shaft even in the ventilation of coal-mines, where fuel is cheapest and where the ventilating-shaft has unusual power through its height.

In fact, the contest between the chimney and the fan for supremacy in draught-production on the basis of fuel-cost may be regarded as definitely settled in favor of the fan. But fuel-cost is not the only element to be considered; there is depreciation and possible breakdown of apparatus, leading to annoying and expensive suspension of works, the additional expense of skilled attendance, etc. These are considerations which become very weighty in small buildings remote from industrial centres. They will be taken up farther on.

The above superficial discussion tends to show that the system of aspiration is obviously limited to favoring conditions. These are clearly, short, large and direct air-ways with freedom from obstructions, combined with uniformity of resistance in the several air-passages discharging into the shaft.

Such conditions can only be found in buildings of very simple and symmetrical plan and low elevation; in auditoriums only when the cellar is given up for air-ways, etc., an advantage now rarely found even in churches. For all buildings of complex plan and of more than two stories (perhaps the limit had best be one story), the system of aspiration by heat is evidently unsuitable if the statements already made have any force. Take the case of a mine: what mining superintendent would be content to operate the ventilation with a force less than $1\frac{1}{2}$ inches of water-gauge? Such a force can only be generated by a great height of shaft and considerable elevation of temperature; thus, it would require a shaft 500 feet high and an elevation in temperature of 200 degrees to produce that pressure, — conditions not difficult in deep mines, but quite impossible in architecture. Is not this fact alone sufficient to condemn the aspirating-chimney for all complicated systems, since it is evident that the force available, not to be too costly, must be very small and yet so skilfully and exactly applied and distributed as to be perfectly effective in every branch of the system? What leeway is there for the unforeseen and unavoidable obstacles that are more or less numerous in every case?

FREDERICK TUDOR.

[To be continued.]

MURAL DECORATION OF THE PARLIAMENT HOUSE, TORONTO. — The Parliament buildings in Toronto are to be decorated with mural paintings by Canadian artists, the subjects being taken from Canadian history. The first decoration to be undertaken will illustrate the discovery of the Saskatchewan River. This will be followed by panels representing Cartier at Quebec, the founding of Montreal by Maisonneuve, and Champlain's discovery of Lake Huron. — N. Y. Evening Post.

PLUMBING.¹—II.

THE OLD, THE MODERN, AND THE ADVANCED SYSTEMS.²

3. The advanced system of plumbing, which up to the present time has been installed in only comparatively few cases, is chiefly distinguished from the regular, common, or double-pipe system by reason of its greater simplicity and compactness. The principles of house-drainage remain much the same, and the advance consists chiefly in the simplification, in greater thoroughness of workmanship, and in greater safety. I have for years contended, and a long experience has only confirmed my views, that where plumbing-fixtures are located within a short distance of a well-ventilated soil or waste line, the special back-air pipes can, with safety, be dispensed with, provided non-siphoning traps are used under basins, bath-tubs and sinks, and provided those types of water-closets are used which have a deep water-seal.

Some able sanitarians have at various times explained the advantages of the system and demonstrated that it is safer and more scientific than the complicated double-pipe system. In my own practice I use the same by preference wherever I am left untrammelled by the dictates of building or health department regulations.

The advocates of back-airing claim that separate vent-pipes are necessary: (1) to prevent traps from being forced by siphonage or back-pressure, also to prevent the absorption of gases by the water-seal; (2) to aerate the traps and every inch of the branch waste-pipes.

The first object can be accomplished safely by methods which are less costly and less complicated, and the second is attained at each discharge of a plumbing-fixture whenever the same is in constant use, and constructed so as to be quick-emptying and working similar to a flush-tank.

Some of the reasons why the back-airing of traps should be given up are as follows:—

(1) Trap vent-pipes increase the liability of the seal of S-traps being destroyed by evaporation. While an unvented non-siphoning trap will hold its seal for two months, a back-aired common S-trap loses it, according to experiments, in from four to twelve days.

(2) The system of back-venting renders possible the making of dangerous bye-passes by the blundering of careless or incompetent mechanics.

(3) The use of trap vent-pipes increases the amount of piping and the number of pipe-joints in a house, and in this way the danger of leaks is greatly increased. In any case they cause greater complication without corresponding greater security.

(4) Incidentally, trap vent-pipes increase the cost of plumbing, and the money paid for them to plumbers is spent quite uselessly. A calculation undertaken by a careful investigator showed that the amount of piping is increased by 33 per cent, and the number of pipe-joints by 66 per cent. The total cost of a plumbing job is increased by at least 10 per cent, and often even more.

(5) Back-air pipes are liable to stop up at the crown, or upper bend, of the trap from congealed grease or other semi-solid matter. They then become inoperative, and hence give a false sense of security. In Cologne, Germany, all back-air pipes which an investigating committee had cut open were found choked with either grease or coffee-grounds or cobwebs. In St. Paul, Minn., an examination by a plumbing-inspector showed that from a total of 23 houses, 12 houses had the vent-pipes from kitchen-sink traps completely stopped up by congealed grease and particles of vegetable matter or lint from kitchen towels. Of the 11 others, only one house had a sink vent-pipe which was perfectly clear and unobstructed, and this was found to be due to the fact that hot water and lye was used once a month in the pipes. In 7 out of the 11 houses, a soft, slimy substance was found adhering to the interior of the vent-pipes for two or three inches above the crown of the trap, and in the other three the vents were partially stopped-up. The vent from the S-trap under the kitchen-sink in my own house has been found partially stopped-up five times in ten years, and would doubtless have become entirely stopped-up before the end of this period if I did not have same cleaned once a year. In northern latitudes, where soil and vent-pipes above the roof may become closed by frost, traps will readily be siphoned under such conditions.

(6) The trap vent-pipe, if placed much below the trap-seal, does not protect the pipe against self-siphonage or loss of seal by momentum. This is a point to which very little attention has been paid.

(7) Non-siphoning traps with more than the ordinary depth of seal are particularly desirable where the mouth of the soil-pipe and, through it, the seal of traps is exposed to the action of boisterous winds, as, for instance, near the top of buildings, the winds causing such an agitation in the trap-water as to make the ordinary S-trap lose its seal by degrees.

Mr. Putnam, a well-known architect of Boston, who has given a great deal of attention to sanitary drainage, calls the trap-vent law "one of the most unfortunate and burdensome building-laws ever inflicted upon the people, and an imposition upon the public."

The late Colonel Waring stated that in his judgment "the separate ventilation of traps, where the main soil-pipe is at least four inches in diameter and open at top and bottom, is unnecessary. . . . Continued experience and observation tend more and more to confirm the opinion that the back-venting of traps, aside from its great

¹Continued from No. 1836, page 37.

²A paper read by the author, Wm. Paul Gerhard, C. E., at the annual meeting of the School for Health Officers, at Burlington, Vt., on July 10, 1901.

cost, does more harm than good, that is to say, that a trap is more likely to lose its seal if it is back-vented than if it is not."

An English expert on drainage called "a diagram of house-plumbing, protected by ventilation-pipes as prescribed by most American authorities, a bewildering nightmare of complicated ingenuity," to which statement many of you will doubtless heartily assent. [The lecturer here again referred to the diagram illustrating a house-drainage system with back-air pipes.]

The fact is, S-traps with vents are perfectly safe only if the vent-pipes are of sufficient area; if they are not of too great length; if there are no sudden bends and not too many of them; if they are free and unobstructed, and if their fixture is used every day. The conclusion is therefore inevitable that, as ordinarily arranged, vent-pipes are "useless complications."

I wish that time would permit me to make a more elaborate comparison between the two methods, in order to impress upon you the important fact that the improved and simplified system is far superior to the one commonly required by rules and regulations. [Here the lecturer explained a wall-diagram showing the advanced system of plumbing.] That the present tendency in plumbing-work is towards an undue complication of the work no one can deny, and it would seem to me that this is a particularly fit occasion, by recalling the superiority of the simpler system, to make a plea for the revision of municipal plumbing-regulations. To the health-officers of those towns or cities which are about to make plumbing-regulations I suggest that the better way is to make it at least optional with the architect or owner of a building whether he will choose the common, or regular, system with double piping, and incur an unnecessary expense, or use the advanced, improved, simplified, and safer method.

I am more than ever convinced that "the one-pipe system," as I have sometimes called it, is the coming system, and that within the next few years even the rules and regulations of our larger cities will be amended accordingly. In my judgment, a plumbing-regulation requiring the use of traps, with anti-siphoning properties and with a considerable depth of seal, would tend to secure much safer and better work than the majority of the present rules. For the thriving rural communities of your own State I can, without the slightest hesitation, advise the adoption of the advanced plumbing-system on account of its greater simplicity, safety and economy.

I have already had occasion to state that, in my judgment, even the most elaborate of plumbing-rules are open to criticisms in many respects, and it might seem appropriate to close this paper by pointing out at least a few rules which, to my way of thinking, are disputed matters.

There is, first, the question whether or not the main house-sewer should have a trap near the front wall of the house. It must be conceded that where the house-pipes are known to be absolutely tight and are provided with plenty of ventilation to the roof, it is better to omit the trap. This secures at least two advantages, namely, it does away with the tendency to stoppages in the trap, and it also offers the best possible solution of the difficult problem of how to ventilate the street-sewer. It is of course necessary that the latter should be well planned, well constructed, well flushed and well cared for.

When a trap is used on a house-sewer—and it does seem to be necessary in the case of foul street-sewers or in the case of connections with cesspools—it becomes necessary to provide a fresh-air pipe which enters the house-sewer above the main trap, and which establishes a circulation of air throughout the entire house-pipe system. The difficulty with the fresh-air inlet lies in choosing a proper location for the same. This difficulty exists only in cases of city buildings, for in country towns and villages, and for isolated country houses, it is comparatively easy to select and provide a secluded place for the fresh-air inlet at a sufficient distance from the house. In our cities we have for years been struggling with a sort of brick pit, or basin, placed near the curb, covered with a grating in which the fresh-air pipe terminated. Practical experience demonstrated the utter failure of this device, and we have by no means found the best substitute for the same. In New York City, for instance, every house-owner who builds or alters a house is at present compelled by the Building Department to use a new patented device which is not only very expensive, but quite worthless.

Regarding the types of water-closets which are permissible in houses I am by no means in entire accord with the plumbing-regulations of most cities. In New York, for instance, iron water-closets are absolutely prohibited by the rules, and yet I cannot imagine anything better, stronger, or more adapted for factories, stables, railroad-stations, schools, insane-asylums, etc., than a good, well-made iron flushing-rim washdown or siphon-jet closet in which the entire inside is well covered with porcelain-white enamel.

Again, these rules prohibit the use of the so-called "long flushing-rim hoppers" except in situations where the closet-bowl holding the water would be exposed to freezing. As a matter of fact, I have had under personal observation for a great many years one of the best types of long flushing-rim hoppers, and I must frankly say that, notwithstanding the fact that it lacks the advantage of a large volume of water in the bowl, it is, to my mind, one of the best closets of the present day. Of course it should be well used, and it should have a well-regulated and plentiful flush.

The rules of many cities prohibit the use of automatic flushing-cisterns for urinals, and require instead a flushing-tank with a chain-and-pull device. We all know the great carelessness exhibited in the use of

such fixtures and the negligence of the general public in flushing the same after use where the fixture is provided with a stop-cock and a water-supply pipe. While the rule appears to be proper in cases where it is desired to limit the use of water or to stop reckless waste, I cannot see why an owner of an office-building, for instance, who puts in a water-meter on his service and is willing to pay the water-bill in full, no matter how large, can be prevented from using such automatic flushing-tanks.

Nearly all rules call for a separate trap under every plumbing-fixture, the same to be placed as close to the outlet of the fixture as possible, and yet, in the case of a set of three or more wash-tubs, building departments have been known to object to a layout of the plumbing in which each of the tubs had a separate trap, which, according to my experience, is the best possible arrangement of such work. Again, in bath-rooms of private houses, where there is a shower or needle bath alongside of a wash-basin and no bath-tub in the room, which certainly can mean but one thing, and that is that the occupant of said house or bath-room intends using the shower-bath instead of a bath-tub probably as frequently as if he had a tub, plans with such arrangement of fixtures have been rejected by the Municipal Building Department of New York City, because each of the fixtures, namely, the basin and the shower-bath, had a separate trap. Instead of this arrangement the Department required that the waste from the basin be run into the trap of the shower-bath, "in order to keep it supplied with water," yet by so doing a channel, or waste-pipe, sometimes 8 or 10 feet in length and lined with slimy waste matters, is left untrapped and in full connection with the air of the room.

Where the rules permit the use of wrought-iron for soil and waste-pipes they require such pipe to be galvanized and exclude the use of asphalted wrought-iron pipe, whereas, as a matter of fact, the asphalted pipe is much smoother on the inside than the common galvanized pipe, and asphalted properly done is probably a better protection against rust than the common method of galvanizing. Some rules I have seen permit the horizontal portion of the house-drain to be asphalted wrought-iron pipe, but insist upon the soil-pipes being galvanized. It would be interesting to know the why and wherefore of such a rule!

Again, where wrought-iron screw-jointed systems are permitted, the rules require recessed drainage-fittings for the soil and waste pipes, but permit the use of ordinary steam-fittings for vent-pipes. It must be evident that if the recessed fitting has any value at all, it is just as desirable to use it for the vent-pipes and particularly for the horizontal runs of the same.

The rules of most cities call for every building to have its sewer-connection directly in front of the building. I well remember a case of this kind where there was no sewer at all in the avenue in front of the building, and where there was a private alley in the rear in which a sewer had been laid by the private owners abutting on said alley. When I filed my plans in the Department showing the house-sewer to run to the rear to said private sewer, instead of to the front, where there was no sewer, my plans were promptly disapproved, and it required several hours' arguing on different days to convince the head of the Department that the sewer-connection in the rear was just as good and certainly just as permissible as the additional outlay of money to which he wanted to subject the owner of the property by compelling him to build a private sewer in front of the house.

Other points in plumbing-rules which were well meant when they were drawn have been unfortunately misunderstood and misinterpreted. Take for instance the rule requiring that every house-sewer should be laid with an inclination of at least $\frac{1}{4}$ inch to the foot. This rule was intended to establish a minimum fall and it is quite obvious to any one who has at all studied hydraulics that the smaller the diameter of the pipe the greater its inclination should be, yet by common consent the majority of mechanics call this " $\frac{1}{4}$ inch to the foot" the standard fall, simply because it is the minimum fall allowed by the Department, and I have in much of my work the greatest difficulty in securing the laying of the pipes at a larger fall where I think this would be desirable, the mechanics contending that the pipes have been laid at the standard $\frac{1}{4}$ -inch fall.

The rule which we find in nearly every plumbing-regulation requiring the back-venting of pipes, namely, that "branch vent-pipes should be connected as near to the crown of the trap as possible," is one which it would be well to omit entirely in the future, for it is not followed any longer in the case of earthen water-closets and earthen siphon-sinks. Similarly in the case of basin and sink traps it is very seldom nowadays that one finds the branch-vent applied to the crown of the trap, one reason being that this would require a coupling or washer-joint at the back-vent connection, which experience has shown to be unsafe. Therefore screw-connections are prescribed by the rules, and while this manner of connection is all right, it does away with the branch-venting of the crown of the trap; therefore, the above-quoted rule should be abolished.

The intersection of the line of vent-stacks into the adjoining soil or waste pipe, above the highest fixture, is now permitted by the majority of rules, and in New York City the only exception is "where there are fixtures on more than six floors." The reason for this exception is somewhat obscure, and it would be decidedly more advantageous to carry all vent-pipes separately through the roof, even if this does require an additional hole to be cut through the roof. Wherever the pipes are so arranged it is possible to make a successful peppermint-test by pouring the peppermint into the soil or

waste line, but where the vent intersects the same below the roof the peppermint-test is in many cases a delusion and a snare, because some of the oil may flow through the vent into the bend of the trap, and thus come out into the room, apparently indicating a leak when really there may be none.

I have on some occasions found it necessary to disconnect certain fixtures, for instance, wash-basins in the centre of a house or in sleeping-apartments, or else sinks in operating-rooms of hospitals, from the soil or waste pipe system of the house, and where such a disconnection is properly arranged it is, in my judgment, a perfectly safe and sanitary system, yet it seems almost impossible to get systems so arranged passed under the present rules of many departments.

One more instance of how even a good rule may fail to work properly, and then I must close this already too lengthy paper.

All plumbing-regulations now call for entirely open plumbing-work, and for tenement-houses in particular the requirement is made in New York City that sinks "shall be left entirely open and the waste-pipe and trap of said sinks are required to be of lead." Now, I am certainly as much as anybody in favor of open plumbing-work, but in the case of tenement-houses this rule is, from a practical point-of-view, a great mistake. The tenants of such quarters have at best a very limited space available, and it is natural for them to use every inch of space, even under the kitchen-sink or wash-tub. They will store the coal-scuttle or pails under the sink, and in a very short time the lead-waste and lead-trap are found dented or knocked flat, and the stoppage of the waste is the inevitable result; therefore, if the plumbing must be open, the rule should call for either brass or iron traps and waste-pipes, and prohibit the use of lead pipes and traps.

Experience has shown that the control and inspection of plumbing and drainage work by health-board officials greatly reduces the chances for scamped work and tends to avoid bad layouts, the use of poor material and criminal workmanship. The honest and conscientious workmen as well as the public are thereby benefited. If the practical work done by efficient health-boards were better understood by the public at large, it would also be more appreciated.

Universal appreciation or approval can, as yet, hardly be expected, for in every community, whether in cities or in the country, persons exist who remain inimical to the efforts made by health-officials to improve the sanitary condition of habitations. But I venture to assert that a greater degree of appreciation of their labors will in the course of time be shown by the public wherever health-officers and plumbing-inspectors perform their work in an honest, fearless, and efficient manner.

BOOKS AND PAPERS

WHEN the second bulky volume of a publication follows its equally bulky predecessor after the lapse of a few weeks only, the reviewer knows before he opens it that he and his fellow-critics must resign themselves to find that all their kindly suggestion, their friendly advice and good-natured chiding have been as absolutely wasted upon author and publisher as have their scoffs and supercilious scorning. Only when months and years intervene between the first and succeeding volumes is there a chance that some of the sensible suggestions the reviewer generously proffers may actually be availed of by the author, to the very real benefit of himself, the publisher and, most of all, the reader. It is a great pity that books that are really worth while, in the main, cannot be reviewed in manuscript by all the critics, who, nowadays, can only see them when it is too late for them to cause the avoidance of errors. As things stand, they can only point out errors,—if any chance to exist,—and it is because of this they have earned for themselves the almost exclusive right to one adjective in the language: advice and suggestion which, if they could have been offered in time, would be felt to be friendly and kindly become *ex post facto* merely and sheerly "carping." It is unfortunate.

The second volume of Mr. Sturgis's "Dictionary"¹ comes to us so soon after the first that we know at once that, in a general way, and especially in mere appearance, it will have all the points, good and bad, common to its predecessor, and this fact materially prevents the shock which accompanied the first turning of the pages of Volume I. Perhaps even more than this may be fairly said. Not quite so grievously has the book-maker sinned this time in the scaling and placing of his illustrations; but, then, he has had less opportunity, for the editor's scrap-book seems not to have afforded quite so many subjects that, for lack of better and more appropriate material—new and especially prepared plates seemingly being out of the question—might be made to fit the case, after a lamentably imperfect fashion. The consequence is that although the cuts still in many cases needlessly overrun the measure, the fact that there are fewer of them gives the type-matter a better chance, and the aspect of the page is fairer and more inviting. But it takes many a page of fair

typography to make one forget the astounding exhibition of parsimony on the part of the publisher or obtuseness on the part of the editor which caused the use of certain coarse cuts of metallic lathing, copied from the manufacturer's trade-circular, as proper and desirable illustration for the description of that article.

This second volume more than the first has the air of an encyclopædia rather than of a dictionary, and so is rather attractive, and tempts the reader to really read rather than browse here and there at random amongst short definitions, and this encyclopædic air is due to the presence of the long articles on "France," "Germany," "India," "Italy," "Japan," and "North Africa," and the shorter articles "Grecian Architecture," and "Greece," and the related papers on "Greco-Roman Architecture," "Latin Architecture," and "Neo-classic Architecture."

In all probability, there always will be in all coöperative literary undertakings a discernible difference between the style and method of the several contributors where the contributions are unsigned, even if the editor-in-chief have taken the utmost pains to map out the work and fix the order in which the several similar topics shall be taken up and laid before the reader. It is doubtful if there ever can be entire harmony and coördination, if the contributors are to depart at all from the dry-as-dust method, and be allowed in any degree to assert their individuality. In the case of signed articles, the difference of style and method is at once understood,—if one chances to look for the writer's name before one begins to read,—and the change in method, purpose and point-of-view is at once accounted for and understood. In the case of these longer encyclopædic papers mentioned above, there seems no internal evidence that the editor has attempted to arrange a general scheme of treatment. Each writer has treated his topic in the manner and after the method that pleased him most, that is, in his individual and habitual style of expression, and the results are interestingly different in the degree and kind of information they convey to the reader.

Mr. Brewer takes us through Germany as if he were "personally conducting" us, and shows us the outside of things, but in a very general and superficial way; we travel easily, and a short look about the town, or duchy, or province is enough for an afternoon, and more than this would be tiresome for the ladies and the laymen of the party. If there be an architect with us who really wants to know something about the rise, progress and transitions of the schools of German architecture, or who seeks to know something of the real architectural characteristics of the building we momentarily halt before, it is a great misfortune for him that he joined our party and not some other one. Mr. Brewer's method calls for copious illustration as a corrective, and it is a cruel waste of possibilities that he was not called on to enlighten his readers with the charming products of his own pencil.

Professor Hamlin's method is that of the careful and conscientious compiler of other writers' statements and deductions, and, having the instinct and training of the pedagogue, he knows how to present his matter so as to give instruction in an orderly manner. But the able teacher is too often but a very indifferent writer, as innumerable text-books abundantly prove, and it is very welcome to us to be able to say that Professor Hamlin does not belong to this class. He has a good style, and the more he writes the better it grows, so that the reader can find real enjoyment as he assimilates his instruction, for he does not find he has to stop, go back and "read the stuff over again" before he can determine "what the fellow means," if he mean anything. But to print such a paper as that of Professor Hamlin's on "India" without a line of illustration is an architectural and literary crime of the first magnitude. Here is a paper which incidentally mentions, and oftentimes describes at some length, some of the wonderful buildings of India, and these accounts do have a certain value for those who are already familiar with Indian architecture, and seek this article merely to have their recollections refreshed. But how about the student who has never travelled in India, and possibly has seen no photograph or illustration of Indian buildings? Have not editor and publisher committed a crime against such as he? For our own part we would like to be able, in a work such as this attempts to be, to turn to this article for illustrations of the several styles which are specifically mentioned and, in some sort, described, and we feel indignant that the editor's scrap-book of borrowed illustrations gave out at this point.

Professor Frothingham, who does the major part of the article "Italy," writes more nearly from the standpoint of the architectural historian, but even more from that of the archaeologist; so much so that, in spite of abundant evidence of scholarship and painstaking care,—his pages bristle with dates and proper names,—one cannot avoid being a little suspicious. For do we not know, nowadays, how little reliance can be placed on the learned deductions of archaeologists, seeing that, almost daily, archaeological theories long accepted are being overturned by the latest result of some of the excavations which are going on in all the elder countries with such phenomenal activity?

Finally, Mr. Longfellow, in his papers, adopts a method which differs as widely from those of the other contributors as does his style. He adopts the deductive method, and reasons from cause to effect, and the smoothness with which he carries out his argument is an enticement and delight.

We do not say that that one method of treatment is better than another, that it is unfortunate that Mr. Brewer did not adopt the more precise method of Professor Frothingham, or that Mr. Frothingham did not have a chance to read Mr. Longfellow's essays before

¹"A Dictionary of Architecture and Building," Biographical, Historical and Descriptive. By Russell Sturgis, A. M.; Ph. D.; F. A. I. A., and many Architects, Painters, Engineers and other expert Writers, American and Foreign. In three volumes. Vol. II, F-N. New York: The Macmillan Co. 1901. Price, cloth, \$18; half-morocco, \$30.

undertaking his more particularized contribution. We merely say that it is rather interesting to find that four writers who were assigned to do essentially similar things should have done them in ways so radically different and individual.

Amongst the very few examples of original illustration in this work may be cited with approbation the skeleton maps of France and Italy, keyed to correspond with the several divisions into which the article on the architecture of those countries has been divided by their several writers. The idea is ingenious, and so helpful that it is strange that it was not extended to the articles on Germany, Greece and India. That it was not is but typical of a certain looseness of treatment and lack of correlation that mars the work. This lack of correlation is very patent in this particular case, for whereas the map of Italy is divided and keyed so as to correspond with the modern geographical provinces of the country, the map of France is divided in a strange and fantastic way that corresponds neither with the boundaries of the older geographical and historical provinces, nor yet with the approximate geographical limitations of the accepted "schools of French architecture"; but the division is no more fantastic than the nomenclature selected, for that is distinctly mixed.

Mr. Hutton's article on "Iron Construction" can be pointed to as a model treatment of the subject for dictionary purposes, sufficiently historical, not too diffusely descriptive of special structures and current processes of actual practice, and rather avoiding a theoretical consideration.

Of course, as in all such publications, the reviewer, as he turns over the pages, notes blunders, omissions and oddities which it is hardly worth while to speak of, so far as the first two classes are concerned, since they may possibly never be corrected; while to speak of the last may but be to expose one's own ignorance. Nevertheless, we feel rather glad to have come upon the word "jaquemart," — which we confess never to have encountered before, — and learn that it is the proper term to apply to the mannikins of metal and clock-work which strike the hours upon a bell, as in the case of the clock on the *Herald* building in New York City.

It was about the time of the Centennial Exhibition that the fad declared itself of using in the English derivatives the letter K to represent the *kappa* in the original Greek, and the word "keramic" and its genus has been an abomination to us ever since: still, we have become wonted to it, and are not surprised to find Mr. Sturgis indexing his article on clay-products under the letter K; but we were quite unprepared to find that the fad has so grown as to embrace the "Keltic cross." Consistency is a jewel, however, and if the *kappa* is to be preserved it should clearly be in words which are used in their original Greek spelling, particularly in proper names, and yet we find the name of the celebrated Athenian architect indexed as "Ictinus," its Latin form, though the Greek form also is given in brackets.

We knew it would inevitably happen that the editor would "fall down" with his cross-references, and forget that he had earlier promised to do something later when he actually came to his last chance, but we did not look for quite so amusing an instance as occurs under the name "Mangin." Here the reader is merely referred to "McComb," and on turning to the latter reference he finds there no mention at all of "Mangin," and the only inference that can be drawn is that Mangin is some sort of nickname for McComb, whereas the fact is that Mangin is believed to have been a French draughtsman in the employ of John McComb, and even possibly the designer of the New York City-hall. What we shall find when we come to the term "rood-loft," we do not know; but it is certainly singular that in defining the word "jubé," Mr. Sturgis should not relate it with the common English term.

Of course, in any such work as this a certain amount of absolute padding and more or less of superfluous matter is to be expected, and it is not worth while to complain because definitions are expanded by so many unnecessary words. As to what is or is not superfluous, who shall say? What one seeker may need is possibly caviare or even henbane to another, and the editor seems to have recognized this, and to have meant to take for his rule: "When in doubt, put in everything." If consistently followed, this course would have been acceptable and defensible, but it has not been. It has, however, led to the inclusion of many of the strange and obsolete terms, probably copied from some antiquated English dictionary or glossary, an inclusion not so very objectionable if only the terms had been marked as British, or obsolete, or both. "Lookum" may be a good and useful term in England at this day for the little pent-house roof over a windlass, but we doubt if any American ever saw it before or needs to see it now; and we doubt if any one need be told that "gatch" is a kind of plaster used only in Persia. Such oddities as these one expects to find in all architectural dictionaries, — their presence seems to be considered the very hall-mark of erudition, — but one does not need to have included in such a work a considerable number of the words which Mr. Dallenbaugh has defined with such care. Most of us are really not such Amerinds as to care about, or to be able to picture to ourselves — the needed illustrations being, as usual, lacking — the exact nature of a "Gānsote," a "Hodensote" or an "Initi," these being forms of Indian lodges.

The inclusion or exclusion of architectural terms in other languages than the English is a more delicate matter, except in those cases where there is no exact English equivalent, and the admission of each such term causes the reader to wonder if the same term in another language or associated terms in the same language have also been included, and, as he usually finds they have not, he feels

discomfort at having wasted time in the search. In defining the word "mirador," a form of oriel-window, the editor prudently adds the warning that it is "hardly in use except in describing Spanish architecture," and it is a pity he has not added a nearly identical warning in the case of similar foreign terms, some of which are introduced exactly as if they were really English words.

As we said in speaking of the first volume, the scheme of typography is well considered and consistently carried out, and we have only one serious fault to find. It would have lent added perspicuity to the page if the architectural term and the individual name of a special structure that it was thought worth while to describe encyclopedically had been set in different type. To have the side-head "City-hall," which is a general term, set in the same style as "Carnegie Hall," which is a special building, — the mention of which at all seems to be quite uncalled for, — is rather irritating, and these special buildings would have seemed to be more in place grouped together and following the generic term, rather than, as now arranged, in simple alphabetical sequence with it. For some undiscernible reason, it does not seem so objectionable that the names of architects, sculptors and other artists should be set in the same type that the architectural terms proper are set in. Perhaps the explanation is that the artist's surname has quite as much right to all the emphasis of bold-faced type as has the architectural term, seeing that there are quite as many, perhaps more, of the first class as of the second. This publication has almost as much right to be held a biographical gazetteer of artists as a dictionary of architectural terms. Mr. Smith has done his part of the work so thoroughly and exhaustively that we sincerely regret that it was not made a separate publication — for his greater glory and its greater usefulness.



[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

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EXTERIOR VIEW OF THE SAME.

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NORTHWEST VIEW OF THE PUMPING-STATION OF THE METROPOLITAN WATER-WORKS, CHESTNUT HILL, NEWTON, MASS. MESSRS. SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS, BOSTON, MASS.

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HOME FOR AGED WOMEN, SPRINGFIELD, MASS. MR. GUY KIRKHAM, ARCHITECT, SPRINGFIELD, MASS.

A VIEW IN UTRECHT, HOLLAND.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

IRON OUTSIDE-BLINDS.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — Can any of your readers tell me whether iron outside-blinds, folding back against the jambs of the windows, like the iron "persiennes" which are to be seen on hundreds of houses in Paris, are made in this country, and if so, by whom? CITIZEN.

NOTES & CLIPPINGS

PLAN FOR A GOVERNMENT FORESTRY BUREAU.—Secretary Hitchcock has announced that he is preparing to organize a forestry bureau in the Interior Department, to carry out an extensive system of reforestation, somewhat on the plan successfully pursued in Germany. — *Exchange*.

AN ITALIAN MODEL LODGING-HOUSE.—An Albergo Popolare, built on the model of the Rowton Houses, and to be conducted on the same principles, has just been completed in Milan, and is to be opened soon. The building, with its fittings, has cost about £26,000. It contains 530 bedrooms, the charge for which will be 4d. or 5d. a night. — *N. Y. Tribune*.

WHAT IT'S COMING TO.—Master (to journeyman joiner) — "Do you call yourself a workman, and turn out a job like that? Have you ever served any time at all at the trade?" Man — "Aye, I served a proper apprenticeship long afore you ever started in business." Master — "Well, what you been at since?" "Well, I've been out on strike pretty well ever since." — *Pick-Me-Up*.

ANOTHER MODEL TOWN.—J. E. Tilt, the President of a shoe-making company in Chicago, is planning what he hopes will be an ideal town at Endicott, N. Y., on the Susquehanna River. He is not deterred by the strike in the cash-register factory at Dayton, nor by the failure of the Pullman enterprise. His town, he says, is to be of a different character. It is not to have Sunday restrictions, except those prescribed by the general law. It is not to forbid the use of tobacco or alcohol, or the formation of labor-unions. Such ordinances as the town will have will be made by its citizens. There will be no class-distinctions. The company will not control the stores, the franchises or the privileges. It will sell the cottages to its employees without restrictions. It has contracted for the expenditure of nearly \$3,000,000 for city improvements, parks, ball-grounds and fine streets lined with shade-trees, and it is expected to begin manufacturing next September with 2,500 employees. There is no philanthropy in all this, Mr. Tilt says. Himself a shoemaker who has risen from the bench, he thinks that he understands the working-men and their needs. These needs, or "rights," as Mr. Tilt calls them, are peace of mind, self-respect and liberty. Given these, he says, and they will be peaceful and prosperous, as well as better workers. — *N. Y. Evening Post*.

THE FIRST SUSPENSION BRIDGE.—As was to be expected, the Northeastern Railway, on acquiring and absorbing in July, 1863, the old Stockton and Darlington Railway, came into possession, upon the lines of its system originally worked by the latter company, of many relics of the early days of engineering. By an Act of Parliament dated May 23, 1828, sanction was obtained to a bill authorizing the construction of a line between Stockton and Middlesborough, including the building of a bridge across the Tees at the former place. This structure was the first railway suspension bridge ever erected. We find that the building was entrusted to Captain Brown, R. N. Great things were from the first expected from it. Before, however, bringing the structure into use for traffic the proprietors instituted a number of tests with unsatisfactory results, and the engineers recommended that "trade might be carried on with the bridge as it was by passing loaded wagons over one by one, the engine passing over first." It was added that "the engine might return with the whole train of empty wagons connected closely together," and that "twenty wagons may be passed over in this way in about five minutes, after the men got into the method." This mode of procedure was adopted, and continued for a short time; but it is not surprising to note that it became necessary shortly afterward to construct a more solid and substantial bridge. — *London Globe*.

ST. PAUL'S CATHEDRAL IN PERIL.—Somers Clarke, F. S. A., points out that the soil on which the great building is placed was never very good, and Wren took his precautions accordingly. But even then the ground yielded a little under the immense weight of the dome and its supports. Had the subsoil been left undisturbed, it may fairly be supposed that no further movements would have taken place. At the bottom of the sandy stratum and over the clay, water is found, and this, no doubt, was soon tapped as the business of the city increased. A source of great danger to the fabric of the Cathedral was thus established. About one hundred years ago great ties of iron were put into the walls. The transepts were tied back to the dome-piers, and also across their fronts in the direction from east to west. Since that time the south transept has shown strong indications of an inclination to slide southward down the hillside toward the Thames. And not only is there movement toward the south, but the wall has opened from east to west. This enormous wall, 5 feet to 10 feet thick, 100 feet wide, and of an equal height, is at the moment showing a tendency to move as above stated; and the movements are such that the breakage is evidently caused, not by the thrusting of arches, but by the actual subsidence of the soil beneath. When we reflect that there are now between the church and the river not only deep drains, but the underground railway beneath Queen Victoria Street, and the Waterloo and City line beneath that, it is evident that the subsoil on which the ponderous masses of masonry rest has been seriously attacked. The west front, with its heavy towers and bells, has also subsided. — *Westminster Gazette*.

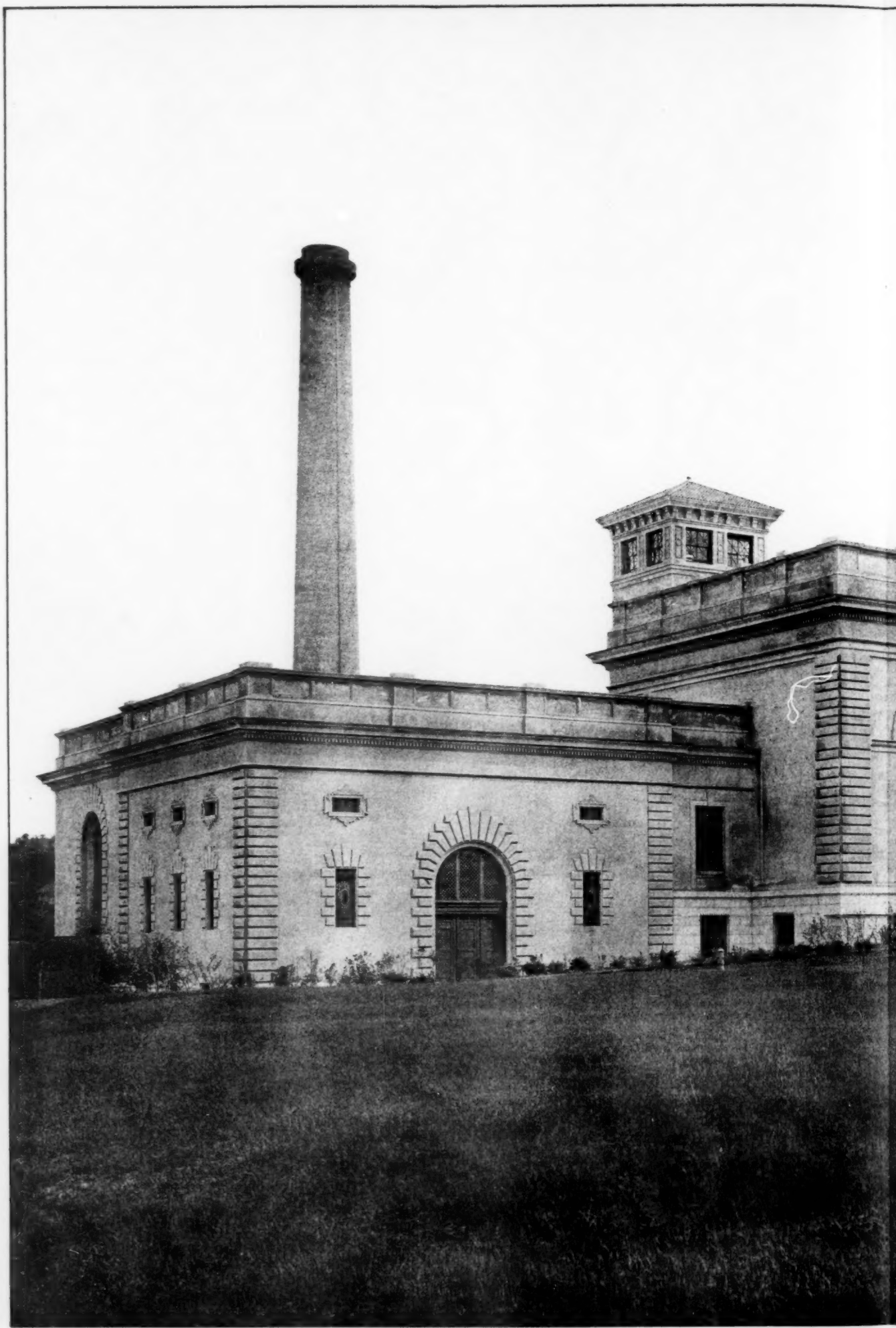
ARCHAEOLOGICAL DISCOVERIES IN INDIA.—A correspondent sends us an account of some excavations recently made by Mr. A. Rea, of the

Archaeological Survey in the Madras Presidency, at Adichanalur, a place about 16 miles southeast from Tinneveli. The first excavations were carried out last year, and, on the surveyor's recommendation, the Government agreed to conserve an area extending over 114 acres. In this ground, burial urns are found over the whole area at average distances of about 6 feet apart, and at depths of from 3 feet to 10 or 12 feet below the surface. About the middle of the area some 3 feet of the surface is composed of gravel, with decomposed quartz rock below. This rock has been hollowed out to receive the urns, with a separate cavity for each. Last year over 600 articles of metal and pottery were found, and this season over double that number, including many unique and curious objects in bronze, iron, and pottery, have been unearthed. The whole collection made by Mr. Rea includes seven gold oval-shaped ornaments; these seem to have been armlets; they are of thin plates of gold ornamented with geometrical dotted designs, and all were found folded up; some 373 articles of iron, including lamps, tools, and weapons, and 188 bronze objects, all either vessels or personal ornaments. A local tradition asserts that near the site was a town extending over 2 miles to the east. The tradition states that the place was devastated and the Pandians annihilated by a horde of Mahomedans. This naturally suggests the invasion by Malik Naib Kafur in A. D. 1310. Mr. Rea, while admitting that the town may have been obliterated then, inclines to think the burial remains belong to a somewhat earlier period. The mode of urn burial seems to have been prevalent among the Pallawas, Pandyas, and other early South Indian races. It appears that in 1876 Dr. Jager, of Berlin, visited this site and obtained a considerable collection of weapons, utensils, and implements for the Berlin Museum. No one seems to have thought it worth while to call attention to it on behalf of any of our Indian or home museums, and it was left to Mr. Rea to rediscover it, after nearly a quarter of a century. — *London Times*.

MICHAEL ANGELO'S HOUSE.—Little by little, as in all other modern cities, Rome is changing, and precious landmarks are disappearing, in many cases against the will of the inhabitants; but artistic considerations must sometimes give way to public convenience. At present it is the house of Michael Angelo which is in question. The monument to Victor Emmanuel is now proceeding apace, and with it the consequent widening of the Corso, and in the way of this stands the historic house. The last twenty years—and among the most interesting—of the illustrious artist were spent here, as it was during that period that his charming friendship with the poetess Vittoria Colonna took place, and it was here he wrote his sonnets whose inspiration she was, and here that he made his last designs. On a cold day in February, 1561, he died an old man, and was taken to the Church of the SS. Apostoli, not far off, which stands next the Colonna Palace. In the church is still to be seen the statue of Michael Angelo on the tomb where it was intended to lay him. Modern criticism declares that it was not intended for him, but the features certainly answer to what we know, even to the nose broken by Torrigiano, before he went to pursue his heated career in England. The house was for long revered for its associations, but was eventually lost sight of, and only unearthed, so to speak, in 1866, to be later marked by a commemorative tablet. It is a sad pity that so authentic a relic of the glorious bygone days must disappear. — *Pall Mall Gazette*.

THE ENGLISH COMMISSION ON SEWAGE.—The Commission appointed in 1898 to report on methods of treating and disposing of sewage have now issued a blue-book containing an interim report. The committee have considered more especially the purification of sewage and trade effluents by passage through land, and report that while no kind of soil appears absolutely ineffective, peats and clays are very unsatisfactory, their power to purify sewage being apparently dependent on the depth of the top soil, and where this is less than 6 inches thick the area needed will, in many cases, be so great as to render the system of land treatment impracticable. It is, however, they report, possible to produce by artificial processes, either from sewage, or from mixtures of sewage and trade wastes, effluents which will not putrefy, and which may be discharged into streams without risk of creating a nuisance, and they therefore conclude that the Local Government Board would be justified in relaxing, under proper safeguards, its present rule as to the application of sewage to land. In conclusion, the Commission remark that existing scientific knowledge is not as yet sufficiently complete for fixing the degree of purification necessary for the proper protection of our rivers and streams. Some authorities, guided by medical considerations only, might be inclined to insist on a degree of purification greater than is really necessary, while others, from motives of economy, might fail to reach a sufficiently high standard in this matter. The Commissioners therefore advise the creation of a separate department of the Local Government Board to act as Supreme Rivers Authority, having powers to take action in the protection of streams and rivers, where the local authorities fail to do their duty. — *Engineering*.

WORK OF THE MUNICIPAL ART LEAGUE OF CHICAGO.—The Municipal Art League of Chicago has begun a campaign having for chief objects the abatement of the smoke-nuisance, the systematic planting of shade-trees, the painting of houses in accordance with some recognized color-scheme, and the abolition of offensive and glaring advertisements upon dead walls and fences. The planting of creeping-vines, such as the Japan ivy, has done so much in adding to the beauty of city houses at a trifling expense that the more general use of such plants is advocated. The pall of smoke under which Chicago has suffered for many years is estimated to cost the city no less than \$250,000 yearly through the ruin of clothes and furniture, to say nothing of the injury to health. The experts employed by the Art League declare that the cost of employing smoke-consuming devices is insignificant; but no relief can be expected until there is systematic prosecution of offenders. — *N. Y. Evening Post*.



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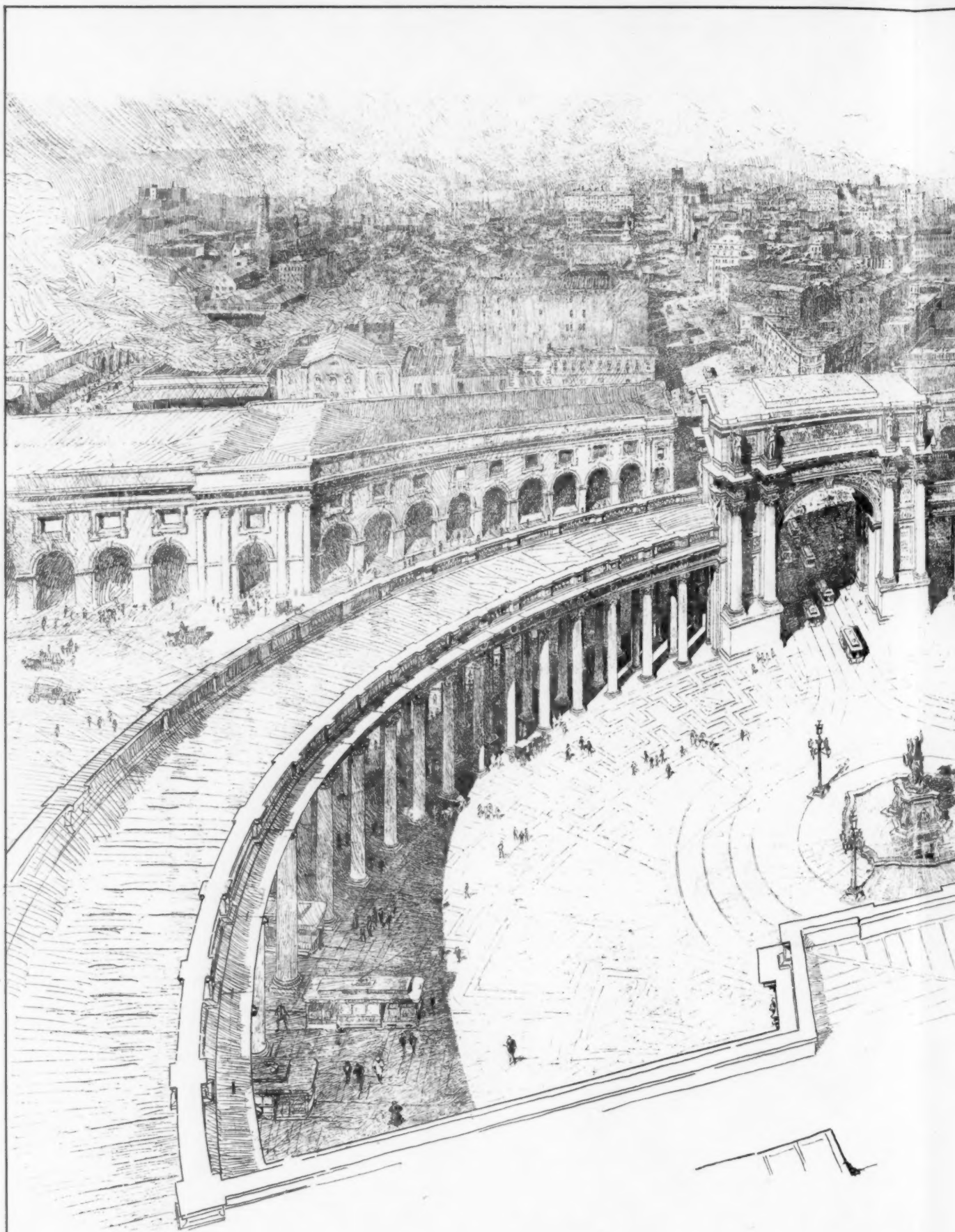
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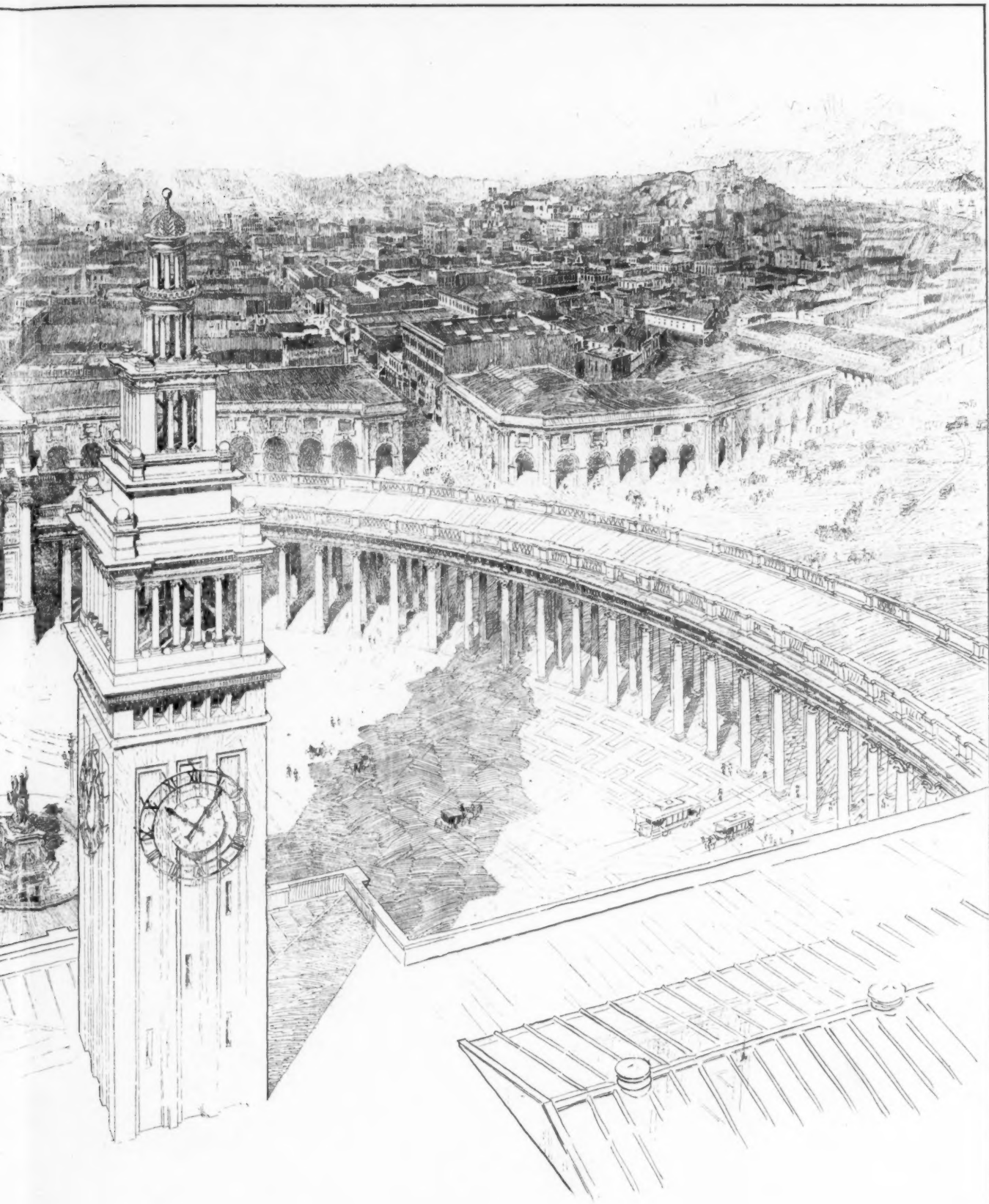
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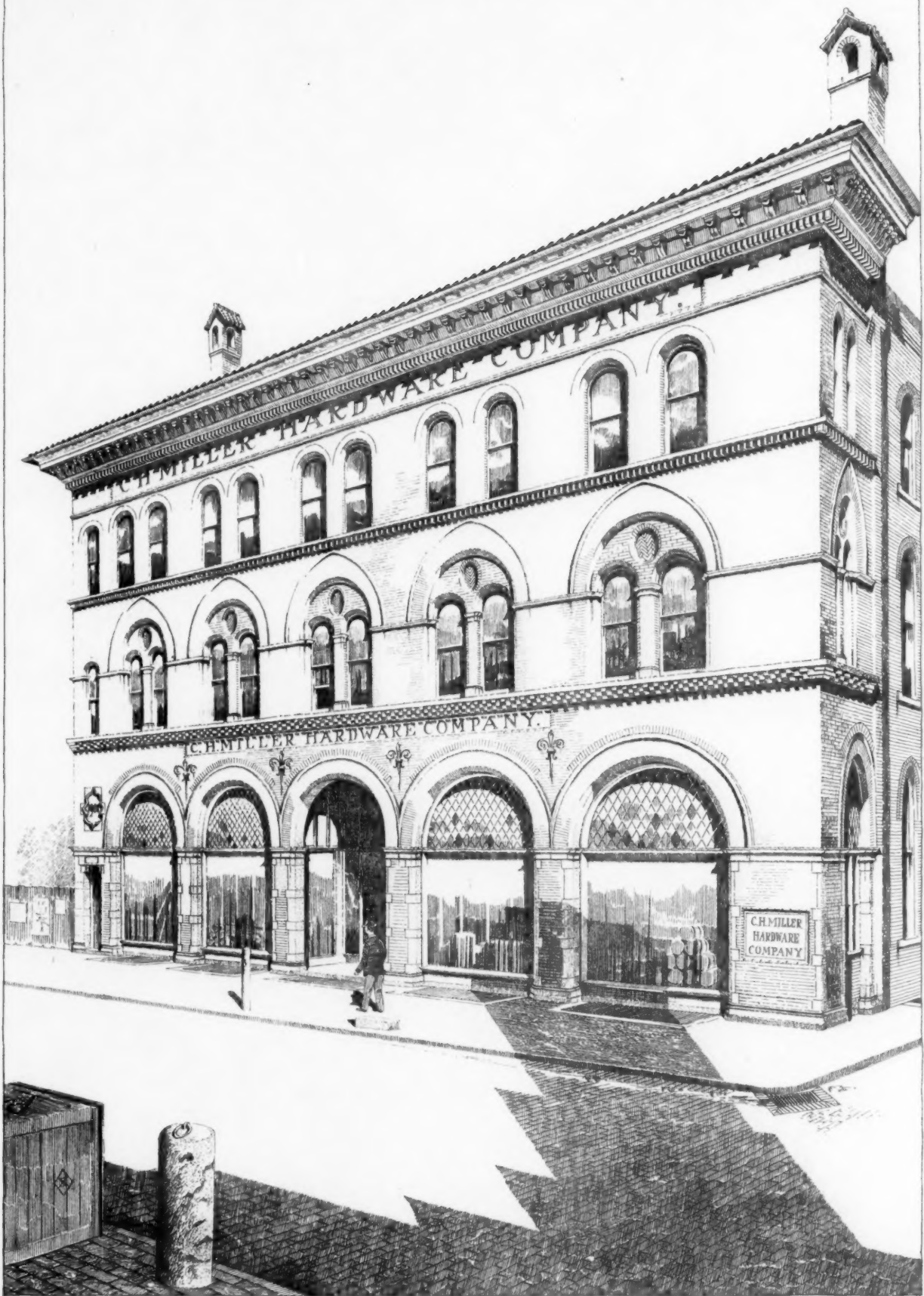
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THE AMERICAN ARCHITECT AND BUILDING NEWS

A WEEKLY JOURNAL OF CONSTRUCTIVE AND DECORATIVE ART

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The matter already illustrated may in small part be classified thus:

PUBLIC BUILDINGS

City Hall, New York, N. Y.		Date 1803-12
Old State House, Boston, Mass.		" 1748
Pennsylvania Hospital, Philadelphia, Pa.		" 1755
Carpenters' Hall, Philadelphia, Pa.		" 1770
Independence Hall, Philadelphia, Pa.		" 1729
Faneuil Hall, Boston, Mass.		" 1741
and others.		

CHURCHES

King's Chapel, Boston, Mass.		Date 1749
Seventh-day Baptist Church, Newport, R. I.		" 1729
Christ Church, Alexandria, Va.		" 1767
Christ Church, Philadelphia, Pa.		" 1727
St. Paul's Chapel, New York, N. Y.		" 1764
Old South Church, Boston, Mass.		" 1729
First Church, Hingham, Mass.		" 1681
St. John's Chapel, New York, N. Y.		" 1803
First Congregational Church, Canandaigua, N. Y.		" 1812
St. Peter's P. E. Church, Philadelphia, Pa.		" 1758
Gloria Dei Church, Philadelphia, Pa.		" 1700
and others.		

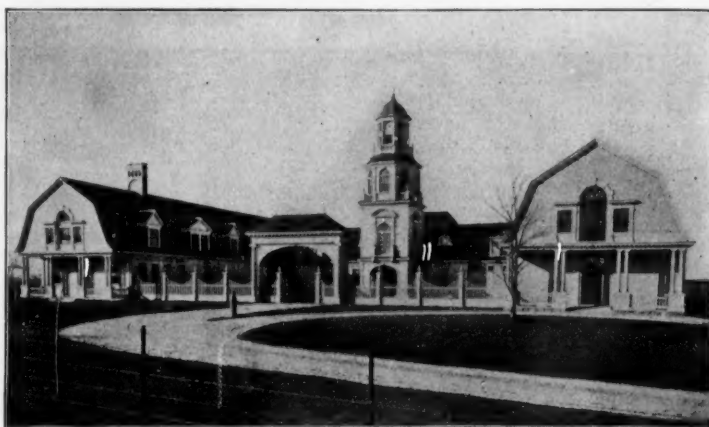
IMPORTANT HOUSES

Fairbanks House, Dedham, Mass.		Date 1636
Royall Mansion, Dedham, Mass.		" 1737
Philipse Manor House, Yonkers, N. Y.		" 1745
Tudor Place, Georgetown, D. C.		" 179-
Mappa House, Trenton, N. Y.		" 1809
Woodlawn, Va.		" 1799
Mount Vernon, Va.		" 1743
and others.		

Incidentally there are shown special measured drawings or large views of the following features and details:

Porches and Doorways		67 Subjects
Staircases		21 "
Mantelpieces		81 "
Pulpits		6 "
Fanlights		60 "

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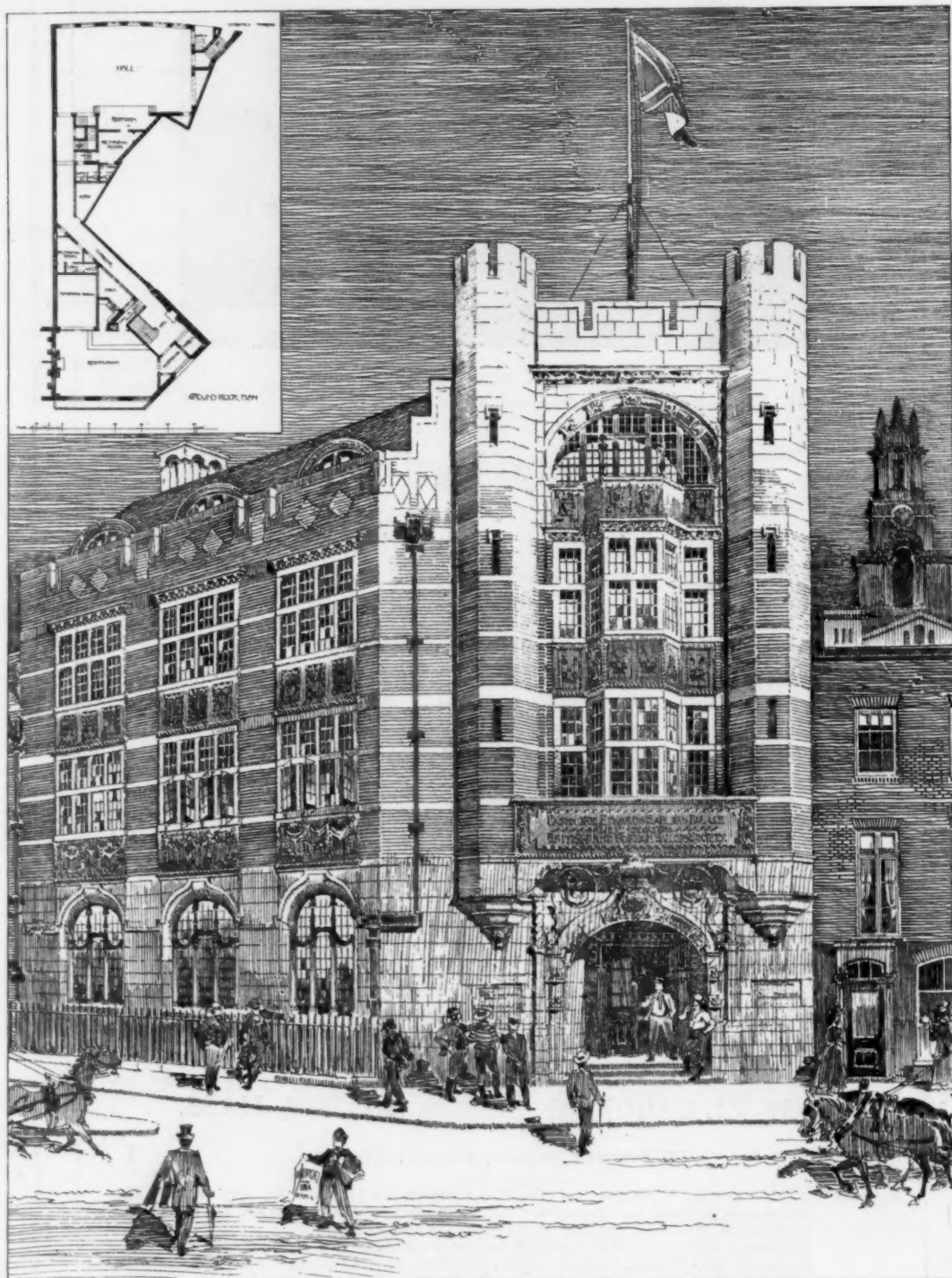
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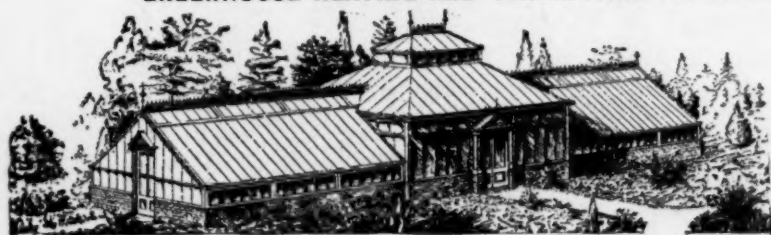
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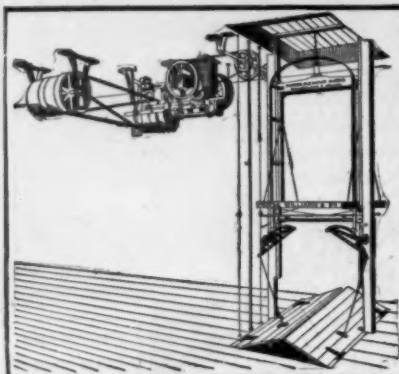
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Important Litigation Relating to Magnesia Covering Patents

THE KEASBEY & MATTISON CO., the owners of the patents for magnesia covering, have commenced a suit in the United States Circuit Court for the Southern District of New York against the Philip Carey Mfg. Co., George D. Crabbs, J. E. Breese, Schoellkopf, Hartford & Hanna Co., J. F. Schoellkopf, Jr., James Hartford, W. W. Hanna, C. P. Hugo Schoellkopf and Jesse W. Starr, to restrain the defendants from making and selling magnesia covering for boilers and steam pipes containing more than 50 per cent of magnesia, and especially coverings containing 85 per cent magnesia.

The Bill prays for a preliminary writ of injunction, to be continued during the pendency of the suit, and upon the final determination thereof to be made perpetual, and also demands an accounting and damages.

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BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Glenville, O.—It is reported that a \$50,000 R. C. Church will be erected on St. Clair St. and Parkwood Boulevard. Rev. Jos. F. Smith, pastor.

Hartford, Conn.—Contract for erecting the new Home for Consumptives was awarded to Stoddard & Caulkins at \$39,000.

Hot Springs, Ark.—William R. Johnston, 184 La Salle St., Chicago, Ill., is preparing plans for a \$100,000 four-story brick hotel, to be built for Geo. L. Smith & Co.

Jamaica, L. I.—Plans have been filed by Deputy Superintendent of School Buildings Collins for a \$100,000 school-house, to be erected at this place.

Janesville, Wis.—Professor J. T. W. Jennings has completed plans for the Janesville Public Library building, which will cost \$40,000.

Kansas City, Kan.—Andrew Carnegie is stated to have offered this city \$75,000 for a public library.

La Crosse, Wis.—Schiek & Roth have prepared plans for a \$15,000 church to be built by the English Lutherans on Ferry St. and West Ave.

Leadville, Col.—The citizens have decided to raise from \$30,000 to \$50,000, which, added to Andrew Carnegie's gift of \$20,000, will be used to erect a building that will serve as a public library and city-hall combined.

Loralai, O.—Plans have been made by George H. Verbeck, of Oil City, Pa., for a \$30,000 opera-house to be built in this place.

Louisville, Ky.—The contract for the erection of the Carnegie library building has been let to Parish Bros., Jackson, at \$25,238.40.

Ludington, Mich.—Joseph Molitor, 153 La Salle St., Chicago, Ill., is completing plans for a Roman Catholic Church for St. Simon's congregation, to be built here. It will be of pressed brick and stone, 58' x 130', and will cost \$30,000.

Mansfield, O.—Frank L. Packard, of Columbus, has prepared plans for proposed improvements to the Richland County court-house, estimated to cost \$50,000.

Minneapolis, Minn.—Plans are being prepared by A. L. Dorr, Lumber Exchange, for a new church to be erected by Grace Presbyterian congregation at a cost of \$15,000.

Muncie, Ind.—Report states that Swift & Co., 188 Madison St., Chicago, Ill., have received the contract for erecting the union depot here at \$35,000.

Newburyport, Mass.—Kendall, Taylor & Stevens, Boston, are drawing plans for the hospital building to be erected by the trustees of the Anna Jacques Hospital.

New Haven, Conn.—The plans of Brown & Von Beren, Exchange Building, have been accepted for the high school, to cost about \$250,000.

New Orleans, La.—F. A. Nouillet is stated to have received the contract to erect the police jail for \$112,800.

New York, N. Y.—From the reorganization of the Brooklyn Wharf & Warehouse Co. has arisen a new \$30,000,000 corporation, which contemplates making enormous improvements on the water front, extending from the Brooklyn Bridge south to Red Hook. David H. King, Jr., has returned to the city from England for the purpose of assuming the presidency of the new corporation, which will be called the New York Dock Co.

Plans for a new hotel, 74' x 95', to be erected here by Maitland G. Graves, at the southwest corner of Madison Ave. and 29th St., have been drawn and filed for a permit. The new building will be of fireproof construction, twelve stories high, and will cost \$750,000 above the ground.

Plans have been filed with the Building Dept. by De Lemos & Cordes for a nine-story fireproof brick, limestone and terra-cotta building to be erected on Broadway and 34th St., for the R. H. Macy Co.

Richard Leavy, 156 Fifth Ave., who has just purchased the plot, 35' x 103', at W. 16th St., will erect thereon a ten-story fireproof office-building,

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

to cost \$100,000, from plans by J. W. Stevens, 156 Fifth Ave.

Ludlow & Valentine, 100 Broadway, are drawing plans for a twelve-story fireproof apartment-hotel to be erected at 44 to 50 W. 45th St., and to cost about \$650,000. The plot is 50' x 100' 5" on 45th St. and 18' 9" x 100' 5" on 44th St., and adjoins the New York Yacht Club on the latter St.

Contracts have been completed by which the city becomes entitled to Mr. Carnegie's library building fund of \$5,200,000 from which 67 buildings are to be erected, the city finding the sites and bearing the cost of maintenance when built. Manhattan and the Bronx, together, are to have 42 of these establishments, and Brooklyn, Queens and Richmond the remaining 25. Work and maintenance of such of these branches as shall be located in Manhattan, the Bronx and Richmond are entrusted to the New York Public Library; those in Brooklyn to the Brooklyn Public Library; and those in Queens to the Queens Borough Library. Construction in the first-named three boroughs is limited to ten buildings a year. These authorities will select sites and ask the city to acquire them. The Board of the New York Library does not meet until October, and, it is presumed, will not commence action, as to selection of sites, architects, etc., until then.

Plans have been filed for what will probably be the largest tenement-house in this city, if not in the world. The building was designed by Harde & Short for the City & Suburban Homes Co., and will occupy the whole block in Avenue A, between 78th and 79th Sts. As it will stand back 200 feet in each street, it will be nearly square, with a ground-area of more than 400,000 square feet. It will contain apartments for 186 families. The cost is estimated at \$180,000. The house is to be six stories high, with a courtyard, of golden buff brick with Indiana limestone and terra-cotta trimmings. The roof will be constructed as a roof-garden and playgrounds for children.

Norristown, Pa.—Plans for two new wings for the State Hospital for the Insane have been prepared by Architects Baker & Dallett, Philadelphia. The work will cause an expenditure of about \$100,000.

Paducah, Ky.—Report states that a Masonic and Odd Fellows' building will be erected here, to cost about \$50,000.

Philadelphia, Pa.—Arrangements are being made to locate a club house on Mount Carmel Ave., Glen-side Highlands. The building will be a stone structure of the Colonial style of architecture, three stories high, with a porch surrounding the entire edifice at both the first and second floors.

B. F. Keith has been given a permit to build his new theatre on a portion of the Baldwin mansion site on Chestnut St., above 11th. The theatre proper will be located on Sansom St. It will be three stories high, with a frontage of 118' and a depth of 129 5'. The Chestnut-Street front will be eight stories high, 40' x 100 1-6'. An arcade will lead to the ground-floor on the first story. The Chestnut-Street front will be of ornamental terra-cotta. The construction will be of cast-iron and steel, and the building is to be thoroughly fireproof. The estimated cost is \$300,000. General Manager, E. F. Albee.

D. H. Burnham & Co., Bookery Building, Chicago, Ill., are making plans for a \$2,000,000 seven-story fireproof office-building, to be built on the site of the Lafayette Hotel.

D. H. Stroud contemplates the erection of a large rug manufacturing plant at 2313 N. American St., and Architects Hales & Ballinger have completed plans for it. The building will be two stories high and will cost about \$25,000.

Pittsburgh, Pa.—Alden & Harlow are preparing plans for a steel office-building, to be erected on 5th Ave. and Wood St. by the Farmers' Deposit National Bank, at a cost of \$1,000,000.

Plans have been made by Alden & Harlow for the Children's Hospital which Henry Clay Frick intends to build on Forbes St., at a cost of \$450,000. George S. Orth & Bro. have let the contract for the building of the large summer-house for Mrs. William Thaw, Jr., to John H. Trimble & Bro., Allegheny, at \$75,000.

The congregation of St. Andrew's Evangelical Lutheran Church will erect a stone church, 75' x 113', to cost \$50,000.

Portland, Ore.—The Young Men's Christian Association will erect a four-story brick building on 4th St., to cost \$30,000.

Raleigh, N. C.—Barrett & Thomson have completed plans for a four-story pressed brick and stone office-building, to be erected by the Carolina Trust Co., at a cost of \$20,000.

Rochester, N. Y.—Thos. W. Finucane, 3 Elton Pl., has received the contract for erecting a high school for \$175,000.

Sellersville, Pa.—St. Paul's Reformed congregation will build a \$20,000 church. Rev. G. G. Greenwald, pastor.

Somerville, Mass.—It is proposed to erect a 12-room school on Maple St.

Southboro, Mass.—Winslow & Bigelow, of Boston, have prepared plans for a three-story brick addition to St. Mark's School, 34' x 82'; cost, about \$30,000.

St. Paul, Minn.—A two-story brick school-house to cost \$20,000 will soon be built by the St. Stanislaus Catholic Church.

Reed & Stem, Endicott Building, are preparing plans for a detention ward for the City and County Hospital, to cost \$45,000.

Terre Haute, Ind.—Huehl & Schmid, Metropolitan Block, Chicago, Ill., have prepared plans for a \$200,000 manufacturing plant, to be erected here for the Columbia Enameling & Stamping Co. There will be a four-story warehouse, 64' x 194'; a two-story fireproof stamping department, 140' x 260'; an enameling room, 260' x 231', and several other small buildings. The power-house will be 50' x 110', and the equipment will include an electric-light plant, engines, boilers, dynamos and pumps. Everything will be operated by electricity and construction will be commenced at once.

Troy, N. Y.—It is stated that plans have been completed for the new union depot. It is to be a two-story structure, 47' x 400', erected on the site of the present station, Broadway, Fulton and Union Sts.; probable cost, \$300,000.

BUILDING INTELLIGENCE.

(Advance Rumors Continued.)

Utica, N. Y.—The plans of Arthur C. Jackson, 55 W. 33d St., N. Y. City, have been selected for the Utica Public Library, to cost \$165,000.

West Hartford, Conn.—Edward T. Haggood, 141 Trumbull St., Hartford, will prepare plans for a \$60,000 town-hall, to be built at this place.

Westminster, Md.—Jackson C. Gott, 218 N. Charles St., Baltimore, has prepared plans for a building to be occupied by the Westminster Savings Bank. It will cost \$25,000.

Wilmington, Del.—The contract for erecting the Pullman Palace Car Company's shops is stated to have been awarded to R. & S. Sollitt, 140 Dearborn St., Chicago, Ill.; estimated cost of the work reported to be about \$190,000.

Winchester, Va.—The plans of C. B. Keferstein, of Washington, D. C., have been accepted for the Winchester Memorial Hospital, to cost about \$14,000.

Winnipeg, Man.—Andrew Carnegie has presented \$100,000 to this city for a free public library, and the City Council has accepted the gift.

Worcester, Mass.—Fuller & Delano, 452 Main St., are preparing plans for a new building for the City Hospital to cost about \$75,000.

York, Pa.—The School Board has adopted plans prepared by J. A. Dempwolf for the two-story school-house to be built at Albemarle and King Sts., at a cost of \$50,000.

ALTERATIONS AND ADDITIONS.

Mt. Vernon, N. Y.—Alteration & addition to two-story bk. & st. school, 86' x 90' x 77' x 112'; \$30,000; o., City of Mt. Vernon; a., Herbert Lucas.

APARTMENT-HOUSES.

Chicago, Ill.—Fulton St., Nos. 1422-24 & 1432-34, 2 three-story aparts., 50' x 50'; \$25,000; o., Minnie G. McIntosh; a., Huehl & Schmid; b., Philip Lotz. E. Seventy-fifth St., Nos. 115-117, three-story bk. & st. store, flat & hall building, 50' x 108'; \$30,000; o. & b., John H. Jones; a., John R. Stone. Sixty-fifth St. and Harvard Ave., three-story bk. & st. apart., 101' x 107'; \$70,000; o., Wm. McKelvie; b., Willmore Alloway, 1551 Marquette Building. Jackson Ave. and Fifty-sixth St., three-story bk. & st. flat; \$20,000; o., Joel M. Longenecker; c., Medinah Construction Co.; a., C. W. Van Kuren.

New York, N. Y.—Broadway, 56th to 57th Sts., twelve-story apartment-hotel, 166' 5" x 171' 5" x 214'; o., Irons & Todd, 320 Broadway; a., Clinton & Russell, 32 Nassau St. W. One Hundred and Twenty-eighth St., Nos. 246-248, six-story bk. flat, 50' x 50'; \$110,000; o., Ida J. Walker, Irvington; a., C. Abbott French, 416 W. 42d St.

Ninety-eighth St., nr. West End Ave., eight-story bk. & st. flat, 86' 11" x 100'; \$243,000; o., William H. Beard, 111 Broadway; a., H. Alban Reeves, 105 E. 17th St.

EDUCATIONAL.

Clinton, Mass.—Main St., two-story bk. school; \$20,000; o., Town; a., C. J. Bateman, Boston.

Newton, Mass.—Langley Road, two-story bk. & st. school, 58' x 98' 6", pitch roof, steam; \$33,000; o., City; b., F. H. Jackson; a., W. R. Forbush.

HOSPITALS.

Boston, Mass.—Harrison Ave. and Concord St., Ward 12, six-story brick hospital, flat roof, steam; \$350,000; City of Boston; b., F. G. Coburn & Co.; a., Kendall, Taylor & Stevens.

Newton, Mass.—Washington St., one-story bk. hospital, 37' x 62'; \$12,000; o., Newton Hospital Corporation; b., E. and F. Cummings & Co., Ware; a., Kendall, Taylor & Stevens, Boston.

Washington St., one-story bk. hospital, 36' x 110'; \$18,000; o., City of Newton; b., H. H. Hunt; a., Kendall, Taylor & Stevens, Boston.

HOTELS.

Parkersburg, W. Va.—Six-story fireproof hotel & bank building, 100' x 100'; \$150,000; o., Bank Block Investment Co.; a., Sam'l Hanaford & Sons, Cincinnati, O.

HOUSES.

Boston, Mass.—L St., No. 206, Ward 14, three-story fr. dwell., 23' x 65', flat roof, stoves; \$5,000; o. & b., A. H. Flint, 614 Sixth St., S. Boston. Park St., No. 11, Ward 23, two-story fr. dwell., 35' x 48', pitch roof, furnace; \$6,500; o., F. A. Schirmer; b., J. P. Campbell, 26 Boylston St., Jamaica Plain; a., E. N. Boyden.

Hollander St., nr. Crawford St., Ward 21, two-story fr. dwell., 26' x 43', pitch roof, furnace; \$5,500; o., French & Shea, 2696 Washington St.; b., Lelacheur & Young.

Newcastle Road, nr. Faneuil St., Ward 26, two-story fr. dwell., 29' x 46', pitch roof, furnace; \$6,000; o. & b., Brooks Walker, 11 Mountford St.; a., G. E. Parsons.

Columbia Road, opp. Hewing St., Ward 20, two-story fr. dwell., 28' x 49', pitch roof, hot water; \$6,500; o., Annie G. King; b., Wm. Riley, 22 Auckland St.

Spencer St., nr. Wheatland Ave., Ward 20, two-story fr. dwell., 24' x 51', pitch roof, furnace; \$6,000; o. & b., M. F. Sullivan, 266 Millett St.

Torrey St., nr. Washington St., Ward 24, three-story fr. dwell., 21' x 40', flat roof, stoves; \$8,000; o., Ashmont Improvement Assn.; b., W. H. Newcomb, 36 Templeton St.

Hillside St., cor. Wait St., Ward 19, three-story fr. dwell., 25' x 40', flat roof, stoves; \$5,000; o., Peter A. Hoban; a., T. J. Desmond, 6 St. Alphonsus St.

Tonawanda St., nr. Waldeck St., Ward 20, 2½-story fr. dwell., 28' x 46', pitch roof, furnace; \$5,000; o., Hattie H. Walker, 85 Waldeck St.; b., J. E. Wagner; a., A. W. Gould.

Quincy St., nr. Barry St., Ward 20, three-story fr. dwell., 25' x 40', flat roof, furnace; \$4,000; o. & b., James D. McKay, 7 Warren St., Roxbury.

Hancock St., Nos. 83-85, Ward 21, 2 two-story fr. dwells., 31' x 50', pitch roof, hot water; \$9,000; o. & b., Henry J. Boden, 51 Evelyn St., Dorchester.

L St., Ward 14, three-story fr. dwell., 24' x 50', flat roof, stoves; \$4,000; o. & b., Watson & Waite, 536 First St.

Bernard St., nr. Browning Ave., Ward 20, two-story fr. dwell., 25' x 49', pitch roof, hot water; \$6,500; o., Mary H. Hannab, 33 Bernard St.; b., James J. Jenkins.

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BUILDING INTELLIGENCE

(Houses Continued.)

Newcastle Road, Ward 25, two-st'y fr. dwell., 29' x 46', pitch roof, furnace; \$5,100; o. a. & b., Geo. E. Parsons, 850 Tremont Building.

Ballou Ave., nr. Jones St., Ward 24, two-st'y fr. dwells., 23' x 36', pitch roofs, furnaces; \$8,000; o. & b., B. F. Crosscup.

Hampstead St., nr. Parkway, Ward 22, two-st'y fr. dwell., 24' x 32', pitch roof, furnace; \$3,500; o. Caro. E. Donick; b., B. McDonald.

Agassiz Park, No. 11, Ward 23, two-st'y fr. dwell., 19' x 50', pitch roof, furnace; \$5,000; o. C. S. Waldo; b., J. P. Campbell, 28 Boylston St., Jamaica Plain; a., Peters & Rice.

E. Eighth St., Ward 14, three-st'y fr. dwell., 24' x 50', flat roof, stoves; \$4,000; o. & b., Watson & Waite.

E. Ninth St., Ward 14, three-st'y fr. dwell., 24' x 50', flat roof, stoves; \$4,000; o. & b., Watson & Waite.

Newcastle Road, nr. Faneuil St., Ward 25, 2½-st'y fr. dwell., 25' x 45', pitch roof, furnace; \$5,500; o. & b., Brooks Watson; a., G. E. Parsons.

Hamilton St., No. 197, Ward 20, two-st'y fr. dwell., 30' x 51', pitch roof, furnace; \$5,500; o. J. F. Fitzgerald; b., Geo. Laming, 111 Clifton St.; a., C. E. Putnam.

Faneuil St., Ward 25, two-st'y fr. dwell., 33' x 33', pitch roof, furnace; \$5,000; o. & b., C. E. Baxter, Brookdale Road.

Diaphan St., Ward 24, three-st'y bk. dwells., 23' x 50', flat roofs, stoves; \$9,000; o., Abraham Rossoo; a., G. H. Smith, 15 School St.

Chambers St., cor. Brighton St., Ward 8, four-st'y bk. dwell., 28' x 30', flat roof, stoves; \$10,000; o. & b., Wm. White; a., G. H. Smith.

Bay State Road, nr. Ashby St., Ward 25, four-st'y bk. dwell., 30' x 58', flat roof, hot water; \$20,000; o., Alfred W. Carr; b., Fessenden & Libby, 31 School St.; a., J. L. Berry.

Harold St., nr. Ruthven St., Ward 21, three-st'y bk. dwell., 50' x 57', flat roof, hot water; \$12,000; o. & b., J. Bolesman; a., A. B. Pinkham, 36 Warren St.

Park St., nr. Bismarck St., Ward 24, 4 three-st'y dwells., 23' x 50', flat roofs, stoves; \$18,000; o., Abraham Rossoo; a., G. H. Smith.

Holmes Ave., nr. Harvard Ave., Ward 25, 7 two-st'y fr. dwells., 28' x 52', pitch roofs, furnaces; \$42,000; o. & b., Johnson & Fenn, Holmes Ave., Brighton.

Murdoch St., cor. Spring St., Ward 25, three-st'y fr. dwell., 25' x 50', flat roof, stoves; \$5,000; o., Miss E. T. Hickey; b., W. T. Henderson, 53 Crescent Ave., Dorchester.

Mayfield St., nr. Dorchester Ave., Ward 20, three-st'y fr. dwell., 25' x 51', flat roof, furnace; \$6,000; o., Thos. Casev; b., Thos. H. Hanlon.

Alexander St., Nos. 95-97, Ward 16, 2 three-st'y bk. dwells., 23' x 40', flat roofs, stoves; \$9,000; o. & b., Frank Russell, 113 Devonshire St.

Bunker Hill St., Nos. 8-10, Ward 3, three-st'y fr. dwell. & stores, 34' x 49', flat roof, stoves; \$9,000; o., M. Roughan; b., Donovan & Co., 38 Winthrop St., Charlestown.

Moseley St., nr. Crescent Ave., Ward 20, three-st'y fr. dwell., 26' x 49', flat roof, stoves; \$5,000; o. & b., Higgins & Scarr, 37 F St.

Chicago, Ill.—Michigan Ave., No. 5129, two-st'y bk. & st. dwell., 26' x 77', pitch roof; \$20,000; o., D. S. Fato; a., George W. Maher; b., S. J. Niblean, 3629 Forrest Ave.

Fifty-fourth Pl., Nos. 400-402, two-st'y bk. dwell., 20' x 48'; \$10,000; o., Thos. Glenn; b., Charles Schleyer; a., L. M. Mitchell.

New York, N. Y.—Bristol St., nr. Jennings St., 2 two-st'y fr. dwells., 22' x 54'; \$12,000; o., Mr. Wauer; a., W. C. Dickerson, 149th St. & 3d Ave.

Worcester, Mass.—William St., 2½-st'y fr. dwell., 30' x 69'; \$12,100; o., Dr. David Harrower; a., Geo. H. Clemence; b., B. G. Hadley.

PUBLIC BUILDINGS.

Boston, Mass.—Charles St., Ward 8, 2 five-st'y bk. & st. buildings for laundry, jail & matron's house, 78' x 131' & 60' x 76', pitch roof, steam; \$550,000; o., County of Suffolk; b., McNeil Bros.; a., H. H. Atwood.

Pittsburgh St., nr. Congress St., Ward 13, three-st'y bk. fire-engine house, 26' x 91', flat roof, steam; \$30,000; o., City of Boston; b., W. T. Eaton, 734 Broadway; a., A. H. Gould.

Worcester, Mass.—Beacon St., two-st'y bk. & st. engine-house, 60' x 125'; \$25,000; o., City of Worcester; b., Eli Belisle; a., Geo. H. Clemence.

STABLES.

Boston, Mass.—Paine St., nr. Walk Hill St., Ward 23, two-st'y fr. stable & shed, 24' x 307', pitch roof; \$11,000; o., City of Boston; b., J. H. Burt & Co., Mattapan.

Brooklyn, N. Y.—Lewis Ave., nr. Gates Ave., two-

BUILDING INTELLIGENCE

(Stables Continued.)

st'y bk. stable, 16' x 23'; \$1,000; o., Fritz Harbagan, 336 Fifth Ave.; a., R. Brocklehurst, 178 Franklin Ave.

Lafayette Ave., nr. Broadway, two-st'y bk. stable, 22' x 30', tar & gravel roof; \$1,350; o., Eliz Klein, 18 Bushwick Ave.; a., W. F. Clayton, 140 Bainbridge St.

Jamaica Ave., nr. Gillen Pl., three-st'y bk. stable, 60' x 143'; \$15,000; o., Wm. F. Donovan, 189 Montague St.; a., M. F. Walsh, 945 Liberty Ave.

Detroit, Mich.—Woodmere Cemetery, two-st'y fr. stable, 60' x 70', shingle roof; \$4,000; o., Woodmere Cemetery Association; a., Jos. E. Mills, Chamber of Commerce Building.

New York, N. Y.—Thirty-sixth St., nr. 1st Ave., two-st'y bk. stable, 17' x 64' 8", gravel roof; \$4,000; o., Anderson Estate, Broad Exchange Building; a., Frank H. Quinby, 99 Nassau St.

Somerville, Mass.—Fr. stable, 30' x 42'; \$2,500; o., E. G. Davis; b., Starbird & Johnson; a., Prescott & Sidebottom, Boston.

Two-st'y bk. stable, 33' x 98'; o., Little Sisters of the Poor; b., Stephen Brennan; a., J. F. Untersee, 176 Devonshire St., Boston.

STORES.

New York, N. Y.—Fifth Ave., Nos. 105-107, eleven-st'y bk. & terra-cotta store & loft building, 66' x 129'; \$550,000; o., Henry Korn; a., Robert Maynicke.

West Broadway, cor. Franklin St., eight-st'y bk., st. & steel fireproof store-building, 60' x 74' 10"; o., Estate John L. Bremer, Boston; b., J. C. Hoe & Sons, 10 Liberty Pl.

Philadelphia, Pa.—Market St., Nos. 922-24, seven-st'y bk. & st. store & loft building; o., J. Allison's Sons; a., Joseph M. Huston.

Pittsburgh, Pa.—Penn Ave., nr. 6th St., in rear, six-st'y bk. & st. store building; \$60,000; o., Henry Phipps; a., Alden & Harlow.

St. Paul, Minn.—Eighth and Minnesota Sts., two-st'y bk. store-building, 109' x 118', gravel roof, steam; \$40,000; o., E. T. Berlesford; c., Newman & Hoy, 313 Chamber of Commerce.

TENEMENT-HOUSES.

Boston, Mass.—Spring St., No. 36, Ward 8, four-st'y store & flats; \$6,000; o., Ida Segal; b., B. L. Segal; a., Fred A. Noreros.

Davenport St., nr. Tremont St., Ward 18, three-st'y bk. tenement, 20' x 49', flat roof, stoves; \$4,500; o., Geo. C. Conant; a., G. H. Smith, 13 School St.

Hull St., No. 5, Ward 6, four-st'y bk. tenement, 28' x 31', flat roof, stoves; \$7,000; o., A. Solari; a., F. M. Churchill.

Worcester, Mass.—Providence St., three-st'y fr. flats, 27' x 62'; \$5,500; o., C. J. Mahaney; a., A. J. Harrington; b., Rourke & Loftus.

Orne St., three-st'y fr. flats, 27' x 60'; \$6,000; o., Mrs. E. J. Banaghan; a., Earle & Fisher; day work.

Hillside St., four-st'y fr. flat, 27' x 52'; \$5,500; o., E. Lundquist; a., E. Carlson; b., F. J. Yates.

Brar Court St., three-st'y fr. flat, 27' x 52'; \$5,000; o., Patrick Fox; b., Rourke & Loftus.

Nixon Ave., three-st'y fr. flat, 27' x 60'; \$5,100; o., D. L. Lamson; a., Harry L. Goodwin; day work.

Suffield St., three-st'y fr. flat, 27' x 62'; \$4,200; o., J. D. Sullivan; a., Chapin & Topanellian; b., Lynch Bros.

WAREHOUSES.

Philadelphia, Pa.—Eleventh and Arch Sts., eight-st'y iron-frame, bk., st. & terra-cotta building, 74' x 171' 6"; o., Pittsburgh Plate Glass Co.; a., G. W. & W. D. Hewitt.

Eighteenth and Chestnut Sts., four-st'y bk. & iron, stone-trimmed store & warehouse, 22' x 144'; \$26,000; o., Fletcher & Co.; a., Addison Hutton.

COMPETITIONS.

COURT-HOUSE.

[At Ortonville, Minn.] H. L. Zwiener, auditor, will receive plans and specifications until August 17 for a \$30,000 courthouse for Big Stone County. 1337

LIBRARY.

[At Covington, Ky.] The Board of Trustees of the public library has rejected plans for a building and will ask for new plans, the same to be submitted on September 15. The building will cost \$75,000. 1337

COURT-HOUSE.

[At Philippi, W. Va.] Plans and specifications are wanted by the County Court until August 19 for a court-house and jail at Philippi. GRANVILLE E. TAFT, clk. 1337

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PROPOSALS.

COLLEGE.

[At Fort Wayne, Ind.] Bids will be received until August 20 for a \$33,000 custodial college for feeble-minded youths, after plans by Alfred Grindie. The structure will be of brick, two stories and basement, have slate roof, steam heat, tile floors, etc. 1337

STEEL WORK.

[At Washington, D. C.] Office of Building for Library of Congress, Washington, D. C. Sealed proposals for constructing, delivering and erecting in place complete two steel trussed covered ways in the east courts of the Building for the Library of Congress will be received at this office until 2 o'clock P. M. on Tuesday, the 13th day of August, 1901. BERNARD B. GREEN, superintendent. 1337

POWER-HOUSE, ETC.

[At Huntington, W. Va.] Sealed bids are wanted until August 15, 1901, for the construction of a building to be used for a power-house and an electric-light plant at the West Virginia Asylum for Incurables at Huntington. COL. C. E. RUDESILL, president board, Charleston, W. Va. 1337

STEAM PLANT, ETC.

[At Washington, D. C.] Sealed proposals will be received at the office of the commissioners until 12 M. Saturday, September 21, 1901, for furnishing and erecting a steam-generating equipment, steam-piping, etc., at the Trumbull Street pumping-station, Washington, D. C. HENRY B. F. MACFARLAND et al., commissioners, D. C. 1338

Treasury Department, Office of the Supervising Architect, Washington, D. C., July 26th, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 22d day of August, 1901, and then opened, for furnishing and installing new boiler-plant for the U. S. Marine Hospital at Cleveland, Ohio, in accordance with drawings and specifications, copies

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PROPOSALS.

of which will be furnished at the discretion of the Supervising Architect on application at this office or at the office of the Custodian at Cleveland, Ohio. JAMES KNOX TAYLOR, Supervising Architect. 1337

FIRE-ESCAPES, ETC.

[At Rome, N. Y.] Bids are wanted August 7 for enlarging barn, constructing fire-escapes on the boys' and on the girls' buildings, and for heating the boys' building and principal's residence at the Central N. Y. Institution for deaf-mutes. W. J. KINGSLEY, pres. bd. trustees. 1337

Treasury Department, Office Supervising Architect, Washington, D. C., July 26, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 20th day of August, 1901, and then opened, for the installation of a conduit and wiring system for the U. S. Post-office building at Elgin, Illinois, in accordance with the drawings and specification, copies of which may be obtained at this office or at the office of the Superintendent of Construction at Elgin, Illinois, at the discretion of the Supervising

PROPOSALS.

Architect. JAMES KNOX TAYLOR, Supervising Architect. 1337

COURT-HOUSE.

[At Cartersville, Ga.] Bids will be received until September 17 for the construction of the \$40,000 two-story brick and stone court-house, 78' x 108', for Bartow County, in accordance with plans by Kenneth McDonald and J. F. Shebley, of Louisville, Ky., and G. W. Golueke & Co., of Atlanta, Ga. 1337

STABLE.

[At Washington, D. C.] Secretary's Office, Dept. of Interior, Washington. Proposals will be received until 2 P. M., August 13, for the construction of a stable at the Government Hospital for the Insane at Washington, D. C. E. A. HITCHCOCK, secretary. 1337

Treasury Department, Office Supervising Architect, Washington, D. C., July 24th, 1901. Sealed proposals will be received at this office until 2 o'clock P. M. on the 21st day of August, 1901, and then opened, for furnishing the heating apparatus complete in place

PROPOSALS.

for the U. S. Post-office at Elgin, Illinois, in accordance with drawings and specification, copies of which may be had at this office or at the office of the Superintendent at Elgin, Ill., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 1337

SCHOOL.

[At Washington, D. C.] Bids are wanted August 17 for the construction of a twelve-room school at Lincoln Ave. and Prospect St., N. E. LANSING H. BEACH, commr. 1337

BUILDINGS.

[At Portsmouth, N. H.] Sealed proposals, endorsed "Proposals for Brick and Steel Buildings," will be received at the bureau of yards and docks, Navy Department, Washington, until 1 o'clock, August 24, 1901, for constructing two brick and steel buildings, 60' x 275' and 35' x 37' at the navy yard, Portsmouth, N. H. Appropriation, \$98,000. Plans and specifications will be furnished by the commandant, navy yard, Portsmouth, N. H., upon deposit of \$15 to secure their return, or can be

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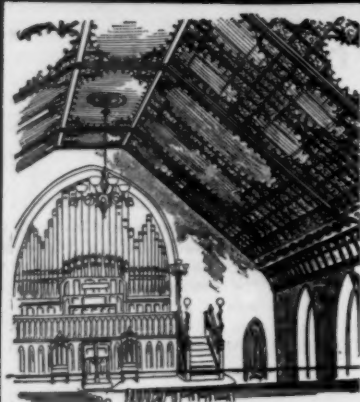
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